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ABSTRACT

Northern Virginia Community College began utilizing a Time-Shared Interactive Computer-Controlled Information by Television (TICCIT) system in 1974 to present the entire course material for English 110 (College Grammar), Math 06 and 07 (Basic Algebra I and II), portions of English 111 (English Composition), and Math 182 and 183. Findings by the college and the Educational Testing Service (ETS) indicate: faculty members who taught in the TICCIT system were released from most preparation and administrative activities and could spend more time with the individual student, since tests, teaching modules, and grades were stored in the computer; no significant differences appeared in student performance among the TICCIT, lecture, and work book sections; non-TICCIT faculty were evenly divided in positive/negative attitudes toward the system; TICCIT faculty held generally positive attitudes; cost analysis findings were inconclusive; and future development and usage of TICCIT depends greatly upon faculty interest and awareness. Lengthy appendices present information regarding TICCIT instructional module development, TICCIT authoring capability, course revisions, statements and qualifications by TICCIT and non-TICCIT faculty, various survey instruments, faculty training, and student attitude survey. (LH)

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1976-77 TICCIT PROJECT

Final Report

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JC 780 049

Northern Virginia Community College Alexandria Campus

Alexandria Campus
Northern Virginia Community College

TICCIT PROJECT
1976-77

FINAL REPORT

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Acknowledgements

Through the support and encouragement of the College Staff and their willingness to provide additional financial assistance during the year, this TICCIT Project was able to be executed during the 1976-77 year.

Special recognition is due those who contributed time and service to the project directly during this year. This recognition goes to Ms. Kathy Bassford, Ms. Barbara Marx and Mr. William Harrison for their assistance with the English Authoring tasks; to Ms. Nadine Rier for her assistance in completing evaluation of faculty attitudes and activity; to the Office of Institutional Research for assistance with data evaluation; and to the English and Mathematics faculty members for their assistance in and support of the TICCIT Project, not only for the 1976-77 year, but since the initial involvement of the College in this project.

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1. HISTORY OF THE NVCC TICCIT PROJECT

1.1 Background

Early in 1971, the National Science Foundation awarded contracts to MITRE Corporation and the University of Texas Computer Assisted Instruction (CAI) Laboratory to develop a prototype CAI system using mini-computers with a cable distribution system. MITRE was to design and build the hardware and software components while the Texas CAI specialists were to develop course materials in college freshman English and mathematics. The population intended for testing the effectiveness of this type of instruction was the students in community colleges. By fall, 1972, the courseware development staff had moved from the University of Texas to Brigham Young University in Provo, Utah.

In the spring of 1972 NVCC was proposed as one of the two demonstration sites for TICCIT, the other being Phoenix College, of the Maricopa Community College District, Arizona. Several criteria were applied in the site selection process such as available space, accessibility to visitors, interest in instructional innovation, and a mixed student population. MITRE needed one site near its McLean, Virginia, offices, and ETS required that the two demonstration colleges have comparable student characteristics and curricula. Because the Alexandria Campus not only met these criteria but also had an urban location, a commitment to innovation in instruction, and a mix of both well prepared and disadvantaged students of all ages, a TICCIT System was installed on the new Alexandria Campus facility, then under construction.

Demonstration phase. The plans called for an eighteen-month demonstration phase, from September, 1974, to January, 1976. During this time a significant proportion of the Alexandria Campus students in beginning Math and English courses would receive their instruction through the TICCIT system. The faculty would be assigned to the Learning Laboratory for additional assistance when the system was not adequate for the students' needs. Instructional assistants, or proctors, would staff the TICCIT facility at all times to help students with technical problems encountered in using the keyboards.

The Educational Testing Service of Princeton, New Jersey was contracted to do a summative evaluation of this demonstration phase. The evaluation was to assess the learning effects and the cost effectiveness of using CAI in the community college.

Not unexpectedly for a project of this magnitude involving five principals in contractual agreement (MITRE, BYU, ETS, Phoenix, and NVCC), many conflicts arose involving the implementation of the project. Two major problems plagued the development stages: the delays in hardware and software development (the latter in particular) and the delays in courseware production. Significantly, the software which underlies TICCIT's unique

capabilities for instruction was not available in time for the writers of courseware to take advantage of these capabilities to the desired extent, for they were being developed simultaneously with the hardware and courseware. Consequently, the course materials were not only delivered behind schedule but were also in substantially unsatisfactory condition.

Courseware difficulties. The authoring of English and Math courseware itself presented another problem for the community colleges. The faculties at Phoenix and NVCC expressed serious reservations about having to teach with materials delivered to them by a distant institution which had had no consultation with them. Not only did the faculties feel they must participate in curriculum decisions that affected their courses, but they were concerned about the four year college approach of the BYU authors. Since community college students have needs and problems largely different from those of university students, the BYU team lacked experience in teaching such students. Early in 1973, therefore, four faculty members from NVCC and Phoenix were assigned to participate in the course writing. From NVCC, Dunstan Hayden for Math and Barbara Wyles for English spent six months in Provo, Utah. As members of the author teams, they sought to influence the course content so that it would both fit the curriculum objectives of the College and be appropriate for the students at NVCC.

1.2 Implementation at the Alexandria Campus

While the software and courseware were being produced at BYU, the Alexandria Campus of NVCC was preparing its staff and facility to accept the TICCIT computer and the 128 student terminals. Dr. Wanda Rappaport was appointed Project Director and charged with overseeing NVCC's implementation responsibilities.

The sub-contract with MITRE and BYU called for NVCC to absorb the costs of outfitting and staffing the facility on the Alexandria Campus. The Learning Laboratory, a multi-purpose open facility in the LRC, was to house the majority of the student terminals in specially designed carrels. The mini-computers and their peripheral equipment would be placed in Room 429, within easy cable distance of the Lab. The additional terminals were to be placed in the teaching divisions for use by faculty and students when necessary.

In the initial plans, the TICCIT system was to be installed in January, 1974, and a training session for faculty and staff was scheduled for that summer. However, it was not until the summer of 1974 that installation was completed. The debugging of the hardware and software took most of the subsequent six months, and the first students

logged on to TICCIT Math in the fall of 1974. (See Table 1 for summary of usage data.) The first three or four quarters that TICCIT was in operation were marked by a high rate of software problems and hardware instability.

1.3 The Courseware

The progress of the courseware development paralleled that of the hardware installation. Content, level, and strategy disagreements between the community college representatives and the BYU representatives in the authoring teams impeded the progress of the project. Of particular concern to the community college faculty was the continued problem of the course outline for TICCIT that did not match the community college curricula.

Several complete lessons of the mathematics course were delivered and readied for use by the Winter Quarter, 1975. Mr. Michael Jones, a member of the BYU authoring staff, was sent to NVCC to monitor the initial use of TICCIT courseware and to collect information on the technical and content errors encountered by students and faculty. This process of courseware debugging had begun at BYU and was to continue at both colleges for the next two years.

The English course materials finally became available in the Summer of 1975. A group of English faculty were contracted for five weeks to become acquainted with the system and to review the on-line lessons. This debug process was to be continued at NVCC during the following year by Ms. Clair Fino, the manager of the English authoring team at BYU.

The community college faculties immediately expressed the need for rewriting much of the English course. Thus at NVCC Ms. Barbara Wyles, Ms. Ellen Raphaeli, and Ms. Diana Nichols had released time during the 1975-76 academic year to work with Ms. Fino, revising some of the units in order to make them usable in the English composition course. Adequate training in authoring for TICCIT was not readily available, however. Despite Ms. Fino's technical assistance and many hours of effort on the part of these teachers, few segments were re-written that year.

To summarize, at the end of the demonstration period, TICCIT courseware was still plagued by serious content errors. Both the English and Math materials contained numerous inaccurate statements and examples. Typographical and technical errors also remained.

TABLE I
Summary of TICCIT Usage

QUARTER	MATHEMATICS[3]			ENGLISH[2]			TOTALS		
	Sec.	Enroll.	Tchrs.	Sec.	Enroll.	Tchrs.	Sec.	Enroll.	Tchrs.
Fall, 1974[1]	03	42	03	**	**	**	03	42	03
Winter, 1975[1]	03	63	03	**	**	**	03	63	03
Spring, 1975[1]	03	71	03	**	**	**	03	71	03
Summer, 1975[1]	01	20	01	**	**	**	01	20	01
Fall, 1975	09	201	08	03	62	03	12	263	11
Winter, 1976	10	231	08	06	117	05	16	348	13
Spring, 1976	08	173	05	09	199	06	17	372	11
Summer, 1976	5	134	04	03	82	02	15	216	06
Fall, 1976	10	126[4]	07	15	333	10	34	485	17
Winter, 1977	14	113[4]	07	9	214	05	23	327	12
Spring, 1977	7	84[4]	04	10	212	07	17	296	11

[1]Limited Use of System to Test Course Material.

[2]System used Adjunctively for English Courses, 10% to 70% of Total Instruction.

[3]Multiple Courses being Taught as One Class by Same Instructor.
Example: 06-02 & 07-02 taught as one class. (Previously Math 31 - Math 32)

[4]Students in most of the sections were given the option of using a programmed text or TICCIT. Approximately 126/194 elected TICCIT.

[5]Includes three sections of English 110 in which ALL instruction was delivered by TICCIT.

1.4 Evaluation

While the Mathematics and English faculties were cataloging the many errors in the TICCIT courseware, students were being assigned to receive instruction from TICCIT in increasing numbers because of the College's contractual obligation to cooperate with the ETS summative evaluation. The collection of data on student performance began in the 1975 Winter Quarter and ended in December, 1976. A report on the findings, due for publication by ETS in late August, 1977, will include information on student and faculty attitudes, the impact TICCIT has had on the campus community, and student performance.

1.5 Transition

1975-76 was a transition year for TICCIT at NVCC. In the Fall, MITRE added a third disk drive to handle the courseware, causing excessive system failures and downtime. By the Winter Quarter, software improvements succeeded in stabilizing the system; by mid-year, unscheduled downtime was practically eliminated. The courseware debugging process had progressed, clearing up major content errors. Management procedures, such as registration and reporting routines, were established and satisfactory.

TICCIT was becoming a part of the normal instructional operation of the Alexandria Campus. Organizationally, it was moved from the category of special project to an integrated part of the Learning Resource Center in July, 1975. The Coordinator of the Learning Laboratory assumed responsibility for managing the technical operation of TICCIT and for facilitating its use by the teaching divisions. In June, 1976, the demonstration period officially ended and, as called for by the NSF agreement, the title to the TICCIT hardware was signed over to NVCC.

2. 1976-1977 TICCIT PROJECT

2.1 Introduction

The question of TICCIT's future role in the college had not yet been explored. The Alexandria Campus therefore proposed a development project for 1976-77 "to bring the TICCIT system into more effective instructional operation and to provide information needed to determine the continuing and future role of the system within the campus and college instructional program."

The specific objectives for the project were:

A. Courseware Objectives.

1. English and Math courseware revisions would be completed.
2. New TICCIT English courseware would be added.
3. The level of competence needed by content specialists and technical editors to maintain existing courseware and to develop new course areas would be determined and specified in terms useful for future projections of system use.
4. College personnel assigned to the Instructional Development Team would possess the level of competence in authoring courseware needed to sustain the system.
5. A system for continuing development of authoring capability within the college would be designed.

B. Instructional Program Implementation Objectives

1. The instructional faculty in mathematics and English would be knowledgeable about TICCIT and capable of prescribing and supervising students' learning through TICCIT.
2. Units in TICCIT courseware would be readily accessible to students for use by individual prescription.
3. Instructional faculty in areas other than math and English and from other campuses would be knowledgeable about TICCIT uses in instruction through orientation and demonstration programs followed by in-service training as requested.
4. In-service training programs for instructional faculty and instructional assistants would be designed and evaluated to be readily available as needed.

C. TICCIT System Evaluation Objectives

1. Within the constraints of institutional research capability and the given time-frame, an evaluation of the instructional outcomes

of the system would be designed, implemented, and completed to provide some evidence of instructional effectiveness and merit. This evaluation would make use of existing ETS evaluation where possible but would be oriented to the NVCC instructional system particularly.

2. An evaluation of the costs of TICCIT instruction would be completed. Included in the cost elements would be cost of hardware operation and maintenance, cost of specialized technical personnel, cost of developing specialized competence in authoring courseware, and cost of specialized in-service training needs for system operation.

To monitor the implementation of these objectives, a Project Director was appointed, Ms. Monica Flynn Sasscer. Three full-time faculty members were released from teaching to accomplish the courseware revision, Mr. Dunstan Hayden (Math) and Ms. Margaret Liu (English) from the Alexandria Campus, and Dr. Edward Huff (Math) from the Woodbridge Campus. In addition, two community college instructional assistants from the Learning Lab were assigned to the TICCIT Project to provide technical and staff support to the faculty authors. A temporary clerk-typist was also hired.

The accomplishments in courseware authoring and the findings of the evaluation effort of this project comprise the remainder of this report.

2.2 Courseware Development

2.2.1 Author training. From October 1 through November 19, 1977, the English and Math faculty authors, the support staff and Mr. Jose Montero, a Spanish instructor from the NVCC Annandale Campus, participated in a training course given by Hazeltine Corporation and Courseware Inc., by special contract with the College, at the Alexandria Campus. The course consisted of six weeks of instruction in the educational strategy in TICCIT's software program design and the skill necessary to author course materials in that format. It was an intensive session, both practical and theoretical. The major emphasis was on hands-on experience, which resulted in the production of fourteen segments or modules in English grammar and poetry, Spanish grammar and vocabulary, algebra and chemistry. At the end of the six weeks the participants were satisfied with the quality of the training and concluded that the College now had the capability to produce its own instructional modules on TICCIT, as well as to make revisions and corrections of the present courseware.

During the remainder of the year, the authoring team made much progress toward revising the original courseware written at BYU. The task was far more extensive than originally thought and was not completed by June, 1977, as projected

in the "TICCIT Project Proposal" of May, 1976. The extent to which the specific courseware objectives of the project have been accomplished is as follows:

a) The revision of the TICCIT English course as written at BYU was approximately 15 percent complete. (See next section for details.)

b) New courseware was added to the English Map. (See next section.)

c) The revision of TICCIT Math 06 was approximately 40 percent complete. (See next section for details.)

d) The competence in authoring which the College had been lacking had been acquired. An outline of the levels of competence required by those involved at the various stages of courseware development is found in Appendix A.

e) The members of the Instructional Development Team had acquired the skills necessary to author and sustain courseware on TICCIT.

f) A proposed system for continuing the development of authoring skills within the College is found in Appendix B.

2.2.2 Revision of TICCIT English and mathematics. When the courseware revision objectives were set forth in the 1976-77 Project Proposal, it was projected that five full-time faculty members, three Math and two English, would be assigned to authoring. Since only two math and one English authors were actually involved, the revision targets were not achieved.

A technical obstacle also impeded the pace of the revision: limited disc space on the system. This prevented the staff from making corrections in more than a few segments at a time. The purchase of an additional disc drive in the new fiscal year should alleviate the situation.

Given these limitations, the accomplishments of the authoring team were substantial. The major accomplishment of the English project was a detailed plan for revising the grammar course (Appendix C). This was an enormous but necessary undertaking to provide guidelines that all the English faculty could agree on and contribute to. The scope of the plan was such that more man-hours will be required to accomplish it than originally envisioned. The present revision is about 15 percent complete. Appendix H details the English segments which have been revised or are projected for completion by mid-summer 1977.

The goal that new courseware be added to the English Map has also been met. This consists of four segments on scansion in English poetry, which have been used by students in English 113 courses and introductory literature courses, on a referral basis. Lessons related to the research paper have been postponed until the current revision is complete.

Appendix H also details the revisions made in the Math courseware. Since two authors were able to work on these materials, more progress was made, such that by the end of the project, July 27, 1977, approximately 40 percent of the Math 06 had been revised; also, the minor errors and typographical flaws had been removed from all of the mathematics courseware.

2.2.3 Cost of courseware development. Among the long term advantages expected from writing programmed instruction materials is the release of instructional faculty from routine lesson planning and skill building tasks. Once good programmed lessons are available for individualized student work, they can have a long life expectancy. But curriculum and course development are expensive parts of the educational budget.

The cost of TICCIT courseware production is difficult to assess. This year's experience can be used to gauge future production expectations, although the revision process is different from the process for creating new course materials. The best combination of subject matter expert (SME) time to instructional design technician (IDT) time has not been clearly determined. Both the authors' experience in writing courseware and the complexity of the subject matter will affect the production rate.

Over a period of 25 weeks after completing their training, the 1976-77 authoring team (3 SME's and 2 IDT's) completely revised 54 TICCIT segments. Thus the number of hours required to complete a segment averages to 92.5 man-hours. Close observation and analysis of these staff members at work indicate that this figure could, in the future, be either much higher or much lower, according to circumstances. One cause of delay is the need to postpone debugging until processing, an operating routine, has been accomplished. An efficient and experienced pair of authors, one SME and one IDT, can produce a segment in 30-40 man-hours. An inexperienced faculty member can double or even triple this time. A review of the CAI literature, however, reveals many references to courseware production rates of 200-400 hours/student hour of instruction. An analysis of TICCIT student use reports indicates that Math students spend an average of forty-five minutes on one segment, and English students spend from twenty to forty minutes per segment. The average figure of 92.5 hours/segment mentioned above for TICCIT, then, is well within the state of the art's time frames, and may even be considerably lower.

2.2.4 Potential for future use. The potential uses of CAI courseware such as TICCIT's have not been fully explored. Although there is still insufficient information on the effectiveness of the present English and mathematics courses,

the fact that they exist and are technically useable is most promising.

In order to fulfill the educational expectations of accessibility and individual pacing for a broad spectrum of students, such as those served at this College, the curricular offerings on TICCIT must be expanded. The greater the variety of topics and subject matter offered, the better will be the information gathered on the usefulness of the delivery system. The main requirements for accomplishing this goal are the interest of the subject matter experts--i.e., the teaching faculty--and the availability of technical support (staff and funds). A modest beginning of institutional support has resulted in the funding of an instructional design technician position in the Learning Laboratory.

Information gathered from surveys, interviews and casual personal contacts indicates that faculty interest already exists in a number of disciplines and some initial planning is underway to support that interest. Specifically, the biology faculty have long been interested in creating a bank of test questions to be generated by a computer when requested by a student. The TICCIT system appears adaptable for this purpose and a project to prepare the questions has been underway during the 1976-77 year. By Fall, 1977, the questions for a unit of Biology 101 should be available for pilot testing. If successful, this project will encourage creation of similar question banks in other disciplines.

The biology staff also hopes to develop instructional segments in such areas as genetics next year. In chemistry, the faculty and Learning Lab staff have cooperated in designing a unit to teach the symbols of the Periodic Table. This module has been in satisfactory use for one year. Proposals for additional segments should be considered early in the next academic year.

Faculty in several other disciplines have discussed instructional delivery via TICCIT. One English faculty member wishes to expand the poetry module. The research paper module is still a potential. In foreign languages, the faculty member from Annandale who participated in the author training would welcome an opportunity to increase the segments in Spanish which he completed at that time. A philosophy teacher has outlined a module on Logic which could be completed with Learning Lab support.

In summary, TICCIT is a CAI system with some unique capabilities to support and enhance the educational process. Disciplines which entail basic learning patterns and structured concepts can use TICCIT's strategies to provide the practice in rule applications and other features which aid students' learning.

In addition, there have been some discussions with the Hazeltine personnel

regarding the addition of a BASIC computing capability to TICCIT. The director of the Phoenix TICCIT Project has indicated there is a great deal of interest in this possibility at that college. Conversations with Alexandria DAPR faculty reveal that their students would overload the system if this opportunity were made available to them.

2.3 Student Performance and Attitudes

2.3.1 Introduction and ETS findings. The National Science Foundation contracted with Educational Testing Service to evaluate student performance and attitudes during the demonstration phase of TICCIT. Beginning in the Fall of 1975 and continuing through Spring 1976, ETS pre-tested and post-tested students who enrolled in Math 31 and 32 (now Math 06 and 07) in both TICCIT and lecture sections. Similar data collection was done on English students from the 1976 Winter Quarter through the 1976 Fall Quarter. While the results of these studies will not be published until the end of August 1977, some of the findings have been communicated to the college.

When the 1976-77 TICCIT Project was conceived, it was decided to collect additional student performance data in Math and English. The Alexandria Campus faculty felt that the ETS evaluation was somewhat premature since it reflected conditions at a time when TICCIT was in its infancy and was not established in the routines of the campus. The additional experience the faculty and staff had with TICCIT might, the faculty felt, affect the results of student achievement testing. Logistical limitations restricted the data collection for this purpose to the 1977 Winter Quarter. The statistical analysis was performed by the college's Office of Institutional Research.

The results of the ETS study which have been reported to the college are summarized as follows:

1. While no significant difference in performance according to instructional method was found when results were averaged over all three quarters, some interesting trends were noted. TICCIT appeared to be unique among methods which make available programmed or self-paced instruction in that some achievement measures are better than traditional, group-paced instruction. Specifically, in mathematics, those students who completed the TICCIT course in one quarter scored higher on the post-test in the winter quarter at NVCC and in the Spring term at Phoenix.

Retention scores were also better for TICCIT Math students. Since a very small number of students fell into this category, the significance of this information can only be suggested. It is important that it occurred at both sites and across each quarter.

In English, the post-test essay scores were higher for TICCIT classes, while the objective scores were lower. As with the Math, these results were similar at both sites. This data has more credibility because the number of students in the comparison group was greater than it was in Math.

2. Completion rates, according to the ETS study, are the weakest aspect of the TICCIT program. This factor affects the Math more than the English because the Math classes use it as a mainline delivery system, whereas TICCIT instruction in English is mostly adjunctive. The indications are that TICCIT has not yet succeeded in improving the record of all other programmed instruction as to completions within the term. Because of this finding, a further study was done by NVCC to correlate time spent on TICCIT with completion rates for the 1976-77 academic year. The results of this investigation (see Completions below) show that students who complete a TICCIT Math course in one quarter do so in an average of 62 hours. Non-completers on TICCIT average considerably fewer than 50 terminal hours, which is the minimum contact hour requirement for a five-credit course. It can be assumed, therefore, that a student's chances of success could be improved if he were willing to spend approximately 62 hours on TICCIT.

3. The ETS study further indicated that Math students' attitudes at NVCC showed no significant difference in course satisfaction and in the amount of individual attention received from the instructor. Those special features, (HELP, ADVICE, etc.) which were rated against similar teacher activities in lecture sections, showed up as negative for TICCIT. The student attitude data for English students has not yet been reported.

2.3.2 NVCC study: Math 06-07 performance and completions, Winter 1977. At the beginning of the 1977 Winter Quarter, all new students registering for Math 06 and 07 were pretested with a slightly modified version of the ETS-constructed instrument used previously. Students were allowed to enter either lecture sections or programmed sections. Those choosing programmed sections were introduced to TICCIT and a programmed workbook version of their course material. After exposure to both methods, students were permitted to choose one of these methods of instruction. At the end of the quarter, or sooner if they completed the course, they

were given a post test, the pre-test they had taken 10 weeks earlier.

In Appendix D are found the analyses comparing the performance of students across all three methods of instruction. The many gaps indicating that scores were not available for some students constituted a major problem in the data collection.

The Office of Institutional Research reported the following analyses of the performance data:

1. Achievement: When the pre- and post-tests of students who completed the course (Math 06 or 07) were compared, no notable effect was found across the three instructional methods.

2. Completions: Lecture sections had the most S grades, 78 percent in Math 06 and 51 percent in Math 07.

3. TICCIT sections had more R grades, 55 percent in Math 06 and 58 percent in Math 07, and fewer S grades than lecture, 21 percent in Math 06 and 23 percent in Math 07.

4. Programmed Workbook sections had the fewest S grades in Math 06, 18 percent, but more than TICCIT in Math 07, 31 percent.

The question of the rate of completion between TICCIT and lecture sections had not been analyzed in terms of hours spent by the student, on the assumption that students have put in the requisite 50 hours on TICCIT per quarter or the 50 scheduled hours plus the normal one to two hours in homework per scheduled class hour in lecture. All other things being equal, it would be hypothesized that completion rates in lecture would be significantly higher because (1) the minimal performance level in the lecture mode is significantly lower than in TICCIT and (2) students may spend more time on the lecture course, where day-to-day group pacing and the necessity of day-to-day homework preparation will cause him to put in far beyond the 50 hours of scheduled class time. By contrast, the individualization of a programmed class permits procrastination without overt ultimate detriment to learning.

Therefore student records were examined to find relationships between successful completion on TICCIT and time spent, as well as time logged by all students on TICCIT per quarter.

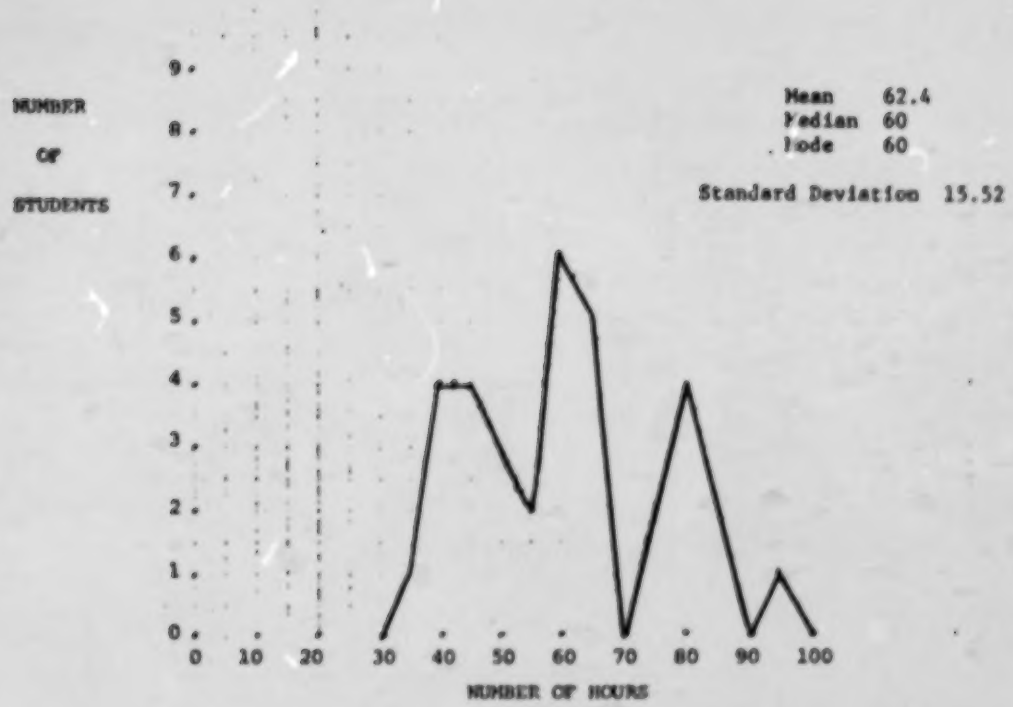

FIGURE 1

Total Time Logged on TICCIT by Completing Math Students, 1976 - 77

Figure I displays the hours spent to complete a course on TICCIT regardless of the number of quarters involved. The significant spread is 35 to 75 hours. Many of those between 75 and 95 hours were cases of students who started out in a TICCIT class by spending unusual amounts of time on the pre MATH 06 review units.

The mathematics faculty told students that they should expect to spend more than the scheduled 50 hours on TICCIT, particularly since outside homework is not required. Figure I shows that, of those completing the course, the mode, median, and average points are the same; this suggests that a student who spends at least 62 hours on the course will have a reasonable expectation of completing in one quarter.

TABLE II

Hours Spent on TICCIT Per Student (Math)

QUARTER	AVERAGE	Hours Spent per Student	
		MEDIAN	MODE
Fall 1976	35.8	35 - 39.9	35 - 39.9 50 - 54.9
Winter 1977	37.1	35	30 - 34.9 50 - 54.9
Spring 1977	35.4	35 - 39.9	20 - 24.9

Table II displays the average and modal figures for the academic year. This analysis indicates that a majority of students spend far less than the advisable 60 or more hours on TICCIT.

TABLE III

Comparative Number of Hours Spent by Students on TICCIT

QUARTER	TOTAL NUMBER OF STUDENTS	NUMBER OF STUDENTS WHO LOGGED MORE THAN 50 HOURS	% COMPARISON
Fall 1976	67	16	24
Winter 1977	63	16	25
Spring 1977	49	9	18

Table III indicates that only a small percentage of students on TICCIT meet the minimal expectation of 50 hours in a given quarter.

This leads to the following conclusions:

1. If Students will spend 60 to 65 hours on TICCIT in a quarter they may reasonably expect to achieve at a higher level with less expenditure of individual time than if they had been in a lecture class.

2. The consideration of the factor of student hours of study does not nullify the ETS finding in comparing completion rates between TICCIT and the lecture mode. However, it does indicate that difference in student study time may account for muchof the difference.

3. As in other instruction that emphasizes self-pacing (when the amount of time spent on a course is left largely to the student's discretion) other factors tend to take priority, and most students do not meet time expectations.

4. It should be noted that the math faculty have been aware of low rates of time spent on TICCIT by students and are exploring additional ways to encourage each student to spend at least 60 hours on TICCIT per quarter.

2.3.3 Follow-up of 1976 Math 31-32 students.

Math 31-32 students of 1976 were tracked by Learning Lab staff for the purpose of determining their registration patterns in further mathematics courses. Table IV shows the completion status of the 576 students who enrolled in Math 31 during the year. Of the 196 who earned S grades, 61 were in TICCIT sections and 135 were in lecture. It is interesting to note the high proportion of TICCIT R grades, 56 percent, and the high proportion of lecture W's, 28 percent.

TABLE IV

MATH 31 COMPLETION STATUS - 1976

MATH 31	TICCIT	%	LECTURE	%	TOTALS
S	61	21.9	135	45.3	196
R	156	56.1	64	21.5	220
W	42	15.1	83	27.9	125
U	19	6.8	15	5.0	34
X	0		1	.3	1
	278	99.9	298	100.	576

The data also revealed that only 66 students enrolled in Math 32 after Math 31. Of these, 38 were TICCIT students and 28 were lecture students. (See Table V)

TABLE V

MATH 31 STUDENTS WHO CONTINUED TO MATH 32

	TICCIT	LECTURE	TOTAL
No. of students enrolled in Math 31	278	298	576
Students who went on to Math 32	38	28	66

Most of the students elected to enroll in the same type of course they were completing, i.e., TICCIT students into TICCIT sections, etc. However, some did not follow this pattern. Therefore, Table VI follows four types of students, according to the method of instruction of their Math 31 and Math 32 courses.

Of the 66 students who enrolled in Math 32, 30 (45%) successfully completed the course. Thirteen of the completers took no other math courses at NVCC and five enrolled in other non-credit math courses. Table VI shows the credit math courses taken by the remaining twelve students, classified according to previous instructional method, and the grades they received. While the number of students is too small for the comparison to be significant, it is interesting to note the 3.8 GPA for students who took TICCIT for both Math 31 and 32, contrasted with the 2.7 GPA for the Lecture/Lecture students.

TABLE VI

ENROLLMENT IN CREDIT COURSES BY STUDENTS WHO COMPLETED MATH 31 AND 32 AT NVCC DURING 1976

Instructional Mode in		Record of Individual Students	Grades in Subsequent Courses	Combined GPA by Instructional Category
MATH 31 (MATH 06)	MATH 32 (MATH 07)			
LECTURE	LECTURE	a	191 I	
		b	181 B, 182 D	
		c	191 C, 192 C	
		d	191 C, 192 B, 193 A	
		e	181 A, 182 W, 182 A	2.7
TICCIT	TICCIT	f	181 A	
		g	161 A, 162 A	
		h	142 B, 191 A	3.8
LECTURE	TICCIT	i	161 B, 162 C, 141 B, 142 A	
		j	161 A, 162 A, 163 A	3.43
TICCIT	LECTURE	k	181 A	
		l	181 W, 122 B	3.5

To summarize, tracking students through their developmental and credit math experiences at NVCC yielded some information which will be useful to the math faculty and the campus as a whole. No conclusions can be drawn, however, that would aid in determining the relative effectiveness of TICCIT versus Lecture as methods of instruction.

2.3.4 NVCC study: English performance data.

Beginning in the Fall, 1975, several English composition (ENGL 111) course sections were taught with TICCIT as a supplementary means of instruction. ETS completed its data collection on all ENGL 111, with and without TICCIT, during the 1976 Fall quarter. The decision was made, then, to continue during the winter, 1977 to gather the same information on the performance of students in those English composition sections that included a laboratory requirement. The instruments which were developed and used by ETS, an objective, multiple-choice test and a writing sample, were used to pre-test and post-test the students.

The results are displayed in Appendix E in the form of printouts of the statistical analysis done by the Office of Institutional Research. The findings are summarized as follows:

1. As to grade distribution, no significant differences appeared between the sections using TICCIT and those not; however, there were somewhat fewer W's--9% compared to 24% in TICCIT sections and somewhat more C's, 33% compared to 20%.

2. As for achievement, a comparison of pre-and post-test scores revealed no significant differences between treatments. The essay scores yielded similar lack of differences in performance between students in the two instructional modes.

2.3.5 English Grammar - ENGL 110.

In the Fall quarter, 1976, three sections of a course in English Grammar, ENGL 110, were offered through TICCIT. Students enrolled to get a review of grammatical terms and analysis. The course was designed as an elective for three credits.

The course was made up of seven units selected from the original thirteen units in TICCIT English composition, arranged in a coherent sequence. Students met with faculty members in the Learning Laboratory, not classrooms. Although times were scheduled for the faculty members to be present in the Lab, students understood that they could pace their study according to their own needs. Weekly printouts showing their progress supplemented the conferences that faculty members held with individual students.

After three quarters, faculty and staff who had been involved in the course evaluated it. Their findings are set forth below.

Place in the educational program. This course serves a worthy purpose in the campus educational program. Many students have expressed a desire for a non-remedial, college-level review of or introduction to English grammar as a discipline in its own right. Thus a course in English Grammar is a desirable part of Alexandria Campus' curricular offerings.

Course content. Not only is the general subject of the course worthwhile, the specific content of the course--the topics and objectives that it comprises--is suitable. Students have evidenced educational benefits from taking the course; they have gained insight to the nature and functioning of grammatical principles and have thus improved their general knowledge of language and communication.

ENGL 110 through TICCIT. Since the Alexandria Campus has students whose learning styles vary widely, self-pacing--which is a major advantage of TICCIT--offers a good way to teach English grammar. For students who are either reviewing or learning quickly, TICCIT allows rapid progress through easy material and a chance to slow down and concentrate on difficult material. For students with less background or aptitude in grammar, TICCIT's patient, slow presentation of material is quite helpful. Also, students who come into the course at mid-quarter can be accommodated because individual students on TICCIT can be working on various stages in the syllabus.

The key to TICCIT's effectiveness in teaching grammar lies in the student's degree of motivation. Since the course is not required and is not tied as a prerequisite to other courses, it attracts mostly those who genuinely want what it offers. Even so, some students are temperamentally or otherwise indisposed to learning through TICCIT; for them, lecture-discussion or other conventional methods would be more effective. In any event,

faculty must be assigned to teach the course in approximately the same ratio (perhaps a little higher--1:30-35) as conventional classes, and should be assigned a classroom for the course.

Conclusions. As a course in the English department at Alexandria Campus, ENGL 110 is worthy; offering it through TICCIT is effective for a substantial proportion of the students who elect the course. TICCIT Grammar is assessed as a vital but not indispensable part of our English program.

2.3.6 Student Attitude Survey of ENGL 110.

The English Grammar course was offered for the first time during the 1976-77 academic year. In an effort to ascertain why students enrolled in the course, how they liked the course, and how it affected their academic plans, students were asked to respond to a questionnaire, a modified version of the Student Attitude Survey used by ETS in the evaluation. Of the 167 students who enrolled in Engl 110 over three quarters, 46 completed the questionnaire. The Office of Institutional Research ran the statistical analysis; the results, shown as means, are listed after each item on the sample survey in Appendix I.

The success rate of students in English 110 was most encouraging: 46.7% of the students received a grade of A, B or C. (see Table VII)

TABLE VII

English 110 Grade Distribution

Grade	Number	Percentage
I	15	8.9
R	40	23.9
W	30	17.9
F	4	2.4
A,B,C	78	46.7
TOTAL	167	100.0

An analysis of the mean responses on the survey reveals that students have a more favorable than unfavorable attitude toward TICCIT. The answers to each item on the survey are interesting in themselves, with several statements meriting a mean above 4.0 (Agree):

- students felt free to ask questions
- TICCIT set a pace that was right for their ability
- students became active in their own learning
- "PRACTICE" items were helpful
- "HELP" was clear
- "RULE" made grammar easy to learn
- students felt responsible for their own learning

- students learned a lot about grammar
- students felt that what they learned would be useful in other courses
- 73.3% of the students disagreed with the statement: I do not like the responsibility for my progress that TICCIT places on me . . .

Figures 2, 3, and 4 depict student attitudes in three combined factors: overall satisfaction, TICCIT features and the amount of individual attention received. Responses in all three areas are consistently positive.

It can be concluded, then, that the English Grammar course on TICCIT successfully met the needs of a segment of the population served by NVCC.

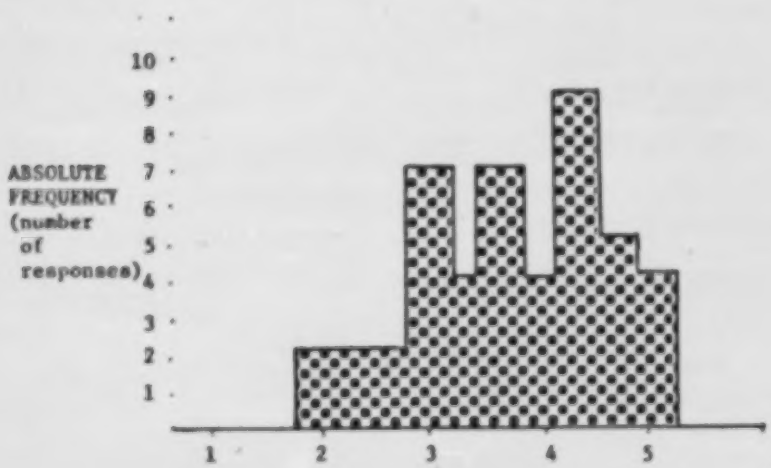

Figure 2.

Overall Student Satisfaction With TICCIT, English 110

RANGE OF POSSIBLE RESPONSES

1. more negative, 2. negative, 3. neutral, 4. positive, 5. more positive

Figure 2 is a graphic representation of the combined response means for the following items:

6. This mode of instruction met my own particular needs.
16. I learned a lot more grammar in this course.
19. In this course I felt challenged to do my best work.
21. The method of this course was too impersonal for me. (Range was reversed)
23. I would recommend this course with TICCIT to my friends.
39. I just tried to finish the lessons rather than learn the material. (Range was reversed)

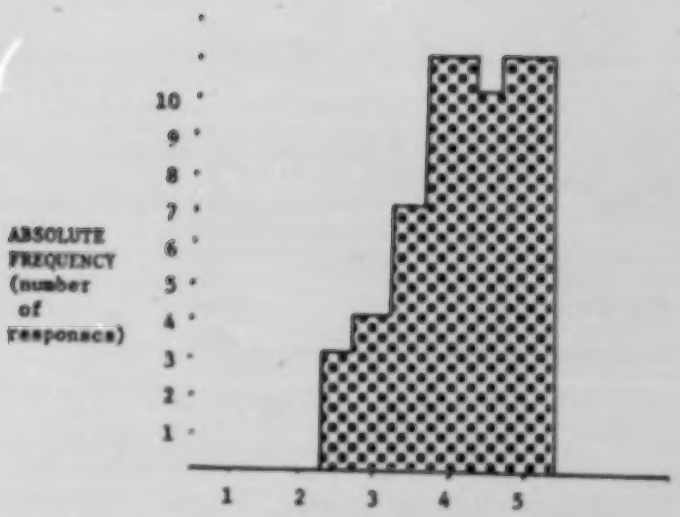

Figure 3.

Student Reaction to Special Features on TICCIT, English 110

RANGE OF POSSIBLE RESPONSES

1. more negative, 2. negative, 3. neutral, 4. positive, 5. more positive

Figure 3 is a graphic representation of the combined response means for the following items:

8. TICCIT's comments on my work ("ADVICE") helped me in learning rules and concepts in grammar.
9. Doing practice questions ("PRACTICE") helped me in learning rules and concepts in grammar.
10. TICCIT "HELP" provided clear explanations when the material was difficult to understand.
11. The rule statements ("RULE") on TICCIT made concepts in grammar easy to learn.

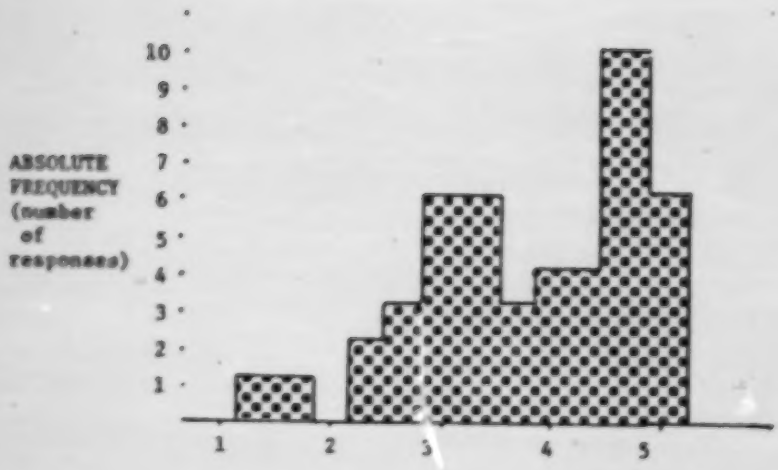

Figure 4.

Student Reaction to Individual Attention Received From Instructional Personnel on TICCIT, English 110

RANGE OF POSSIBLE RESPONSES

1. more negative, 2. negative, 3. neutral, 4. positive, 5. more positive

Figure 4 is a graphic representation of the combined response means for the following items:

1. In this course I felt free to ask questions.
3. I received a lot of individual attention from the instructor in this course.
4. The instructor seemed genuinely concerned with my progress.

2.4 Faculty Attitudes

2.4.1 Interviews of selected TICCIT and non-TICCIT faculty. Faculty attitudes toward TICCIT were surveyed by ETS in the Fall of 1975; the results will appear in the ETS report. In order to update the feelings of both TICCIT (T) and Non-TICCIT (N-T) faculty and the changes that may have taken place since it has become an integral part of the instructional system in Math and English on the Alexandria Campus, data on faculty attitudes were collected and analyzed in the Spring Quarter, 1977.

Forty-three faculty members were selected as a sample for the study, twenty who had taught through TICCIT and twenty three who had not.

All members of the English and Mathematics faculties participated, whether they had taught on TICCIT or not. Eight instructors of biology and two of chemistry were selected due to their being part of the Division of Natural Science and Mathematics and the particular interest with which they had observed the project. Four randomly selected individuals (three from the Social Science Division and one from the Business Division) represented other division opinions.

Instruments. The instrument was a modified version of a questionnaire used by ETS in a survey during the Fall, 1975 quarter. The questions were converted to statements. During the interview, these statements were read to the faculty and their responses were recorded and described as: strongly agree (SA), agree (A), not sure (NS), disagree (D), or strongly disagree (SD). (See Appendix F). They were also given the opportunity to provide further comment on the statements. There were twenty statements which addressed the TICCIT system, students, and instruction. Numbers 1-5 related to the system, while 6-14 had student emphasis, and 15-20 were instruction oriented. Item 16 was composed of two statements in order to capture attitude changes about TICCIT instruction from both TICCIT and Non-TICCIT faculty. The last statement was constructed to elicit open-ended response about each individual's concerns about TICCIT as an instructional mode, its presence on the Alexandria Campus, or any further statements they cared to make.

Procedure. The interviews were held during the last two weeks of April, 1977. Each interview lasted one-half hour. After the statements were read and responses were recorded, an open-ended discussion occurred. Interviewees were encouraged to discuss their general views and reactions to TICCIT and its impact on the campus.

Results. The data in Table VIII of total responses show that Non-TICCIT faculty are split evenly in positive/negative attitudes toward TICCIT. TICCIT faculty participants demonstrate clearly a more positive response to TICCIT. A greater degree of uncertainty toward TICCIT was found among Non-TICCIT faculty. The uncertainty among TICCIT faculty appears to reside in their misunderstanding of the statements made in the instrument or their reservations regarding specific needs and requirements of students. A break-out of specific areas covered by the instrument shows that a major portion of TICCIT faculty firm responses was in the area concerned with students. The positive response in this area was found among TICCIT faculty to be twice that of Non-TICCIT faculty. On the other hand, the TICCIT group gave the greatest negative response in this area; significantly more than that of Non-TICCIT faculty. It is of further significance that the greatest degree of uncertainty was found in the student area of Non-TICCIT faculty responses, which was more than twice that found among TICCIT faculty. It appears that the greatest discrepancy among the faculty groups concerning TICCIT is in regard to students.

Tables IXA and IXB show the responses by subject matter. All English faculty responses (TICCIT and Non-TICCIT) and all Mathematics faculty responses are displayed together, for TICCIT had the greatest impact on these two faculties. Among the TICCIT English group, there seems to be a more positive response toward instruction, judging by the SA and A columns. This group is less certain about TICCIT's impact on students. This group is more certain about their attitudes toward instruction and there is only a difference of 2 responses between agreeing and disagreeing.

The Non-TICCIT English faculty responses show more uncertainty and more responses disagreeing with the statements than agreeing. There appears to be a strong sense of uncertainty regarding the impact of TICCIT upon students.

The responses of the math faculty were generally positive throughout the interview, but the section on students was evenly divided between A and D, with some degree of uncertainty.

Table IXB is a presentation of responses by faculty who were not intimately connected with TICCIT by virtue of their different subject area. Biology faculty were more positive about TICCIT, were much less certain about its impact on students, and showed a positive attitude to it on instruction. The two chemistry instructors participating in the study were evenly divided between A and D, but there were two SA responses, no SD and 2 NS's. They were uncertain about how students were affected and more positive about instruction on TICCIT.

Social science and accounting faculty had no connection with TICCIT instruction, nor did it impact on the Social Science or Business Divisions in any way. Their attitudes and opinions seemed to be positive toward TICCIT as an instructional tool and the teacher's role. They were extremely cautious about its impact on students, giving their highest number of Not Sure responses to that part of the interview.

Tables X and XI display the responses of English and Math TICCIT faculty and are sorted by length of time teaching in this computer assisted instruction (CAI) mode. English faculty who taught from one to three terms on TICCIT seem to be generally evenly divided between positive and negative attitudes toward all the statements, with a large number of "not sure" responses as well. Their attitude toward TICCIT is evenly divided between not sure and D, while A has a few more responses. The student segment of the interview was nearly evenly divided between A and D, but with a large number of NS's as well, while attitudes toward instruction on TICCIT were positive or negative and few unsure responses. The two English faculty who had taught more than 3 terms on TICCIT agreed with more statements regarding TICCIT, were divided evenly in respect to students and agreed more firmly about instruction.

The Math faculty in both the 1-3 and 4-7 term categories agreed with the statements about TICCIT, the 4-7 term even more so than the less experienced group. Their attitudes were less unsure. The more experienced Math faculty were far more positive in their responses than the English faculty. English faculty were ambivalent about TICCIT's effect on students, but their responses about the system and instruction were almost double.

In Tables XII, XIII and XIV, certain ancillary data are presented in regard to age, faculty rank, and years of teaching experience. There does not appear to be enough significant information in these areas to arrive at any conclusions.

Cost effectiveness was the stated concern of 7 TICCIT faculty members and 6 Non-TICCIT faculty members. This topic seemed implied by others. One instructor suggested that large classes may be the solution to offset the cost, while several others mentioned review of student outcomes measured against outcomes in traditional classes. One Non-TICCIT teacher thought it might be an "expensive white elephant" that the school is hesitant about discarding.

About half of the subjects in both groups interviewed felt that exposure to TICCIT should be expanded to other subject areas. Eleven TICCIT faculty considered that further experimentation in skill building subject fields would be necessary before a final decision is made as to its incorporation as a permanent fixture on the campus. One instructor stated that it seems to give some students a definite

sense of direction which many seem to lack, although a number of faculty members noted that computer assisted instruction seems to be most successful for the highly motivated student. Thirteen Non-TICCIT faculty indicated that it should be expanded to other disciplines. One chemistry professor stated that he had experimented by putting one module on TICCIT, was highly gratified by the students' reactions, and was therefore most emphatic that it should be opened to experimentation outside the fields of English and Mathematics.

Although expansion is suggested by the interviewees, none were in favor of its being used exclusively in the mainline mode. Recommendations were made that it should be used adjunctively, for practice or for testing purposes. Frequently comments were made to the effect that individual instructors would like to see empirical results of student outcomes.

One TICCIT faculty member considered the Alexandria Campus fortunate to have an opportunity to participate in the TICCIT demonstration and the administration wise in its openness to innovation. She also commented on the wisdom of continual assessment of it as an instructional mode and the effect on student learning.

Faculty consider the close interaction with students in the classroom as essential in teaching and learning. In discussion with both TICCIT and Non-TICCIT faculty, this notion continually surfaced. TICCIT faculty did not feel CAI was a threat to them, while three Non-TICCIT faculty members felt that it was a threat and three were unsure. Four Non-TICCIT instructors felt the system is a "monster" and should be scrapped.

One concern that often surfaced in the open discussion was in regard to the dehumanization of the machine. It affects the students in such a way that some study the machine and how to manipulate it, instead of concentrating on mastery of subject matter. While some feel that it is good for systematizing information, only the teacher in the classroom can inspire, excite, and motivate students. The role of the teacher is lost in looking at a television screen over the shoulders of students. Student-to-student interaction and teacher-to-student interaction is too important to be interrupted by a machine. Enthusiasm, enrichment, and appreciation are not available in the mechanical transmission of subject matter.

Discussion. The results of this survey of faculty attitudes show that there are mixed feelings about the use of CAI (TICCIT) as an alternative instructional mode. This condition was found also to prevail in other studies (Tobias, 1968; Levien, 1972; Brightman, 1972). In this study, TICCIT users were firm in their views

about its use, but were less certain about the positive effects on students. TICCIT non-users were more ambivalent. TICCIT faculty were receptive to TICCIT before it arrived and some were disappointed on first using it.

According to the limited data on age and experience in this study, it was not feasible to analyze these components. Avner (1975) surveyed general attitudes toward PLATO (a computer-assisted instruction system) and found less resistance among older, more experienced, faculty who had positive attitudes about use of the system.

The most significant finding in the study is the breakdown by discipline and the attitudes displayed toward TICCIT. In a survey of the literature no information on this aspect was found.

Regardless of their attitudes toward TICCIT, a sizeable number of faculty members raised the issue of the high cost of maintaining it and voiced their opinion that this should be measured very carefully against benefits. Some faculty commented that the hiring of more faculty and purchasing more teaching materials may be as beneficial as, or even more beneficial than, continuing with the TICCIT system. Jamison (1974) points out that computer-assisted instruction is an expensive innovation which has not yet been properly assessed. Alexandria faculty expressed the desire to see proof of TICCIT's effectiveness.

All faculty participating in this study see TICCIT as an adjunctive tool for teaching segments of courses rather than as a mainline instructional mode. This view is supported by Magidson (1974) in his study of CAI at the Kennedy-King College, where faculty found it helpful to students in mastery of skills and subject matter. Brightman's (1972) study of 407 faculty members in two community colleges in California revealed that, as active users of CAI, they favored its use for demonstration purposes.

Alexandria faculty who use TICCIT do not see it as a potential threat. Non-TICCIT users are generally confident that it is no threat, although three are not sure and three consider it a threat. Levien (1972) suggests that faculty in higher education feel that alternative instructional modes, in which the faculty role is considerably reduced, are unsatisfactory. Tobias (1968) contends that the threat of automation is repugnant to some faculty members who develop negative attitudes toward its use and hinder effectiveness of its utilization.

Conclusions. The following conclusions emerged from interviews on faculty attitudes.

1. Math and science faculty (T and N-T) were more receptive to the use of computer-assisted instruction than English and other disciplines.

2. Most faculty advocated that it be used adjunctively. The mainline mode should be reserved for skill building.
3. The high cost of TICCIT and the uncertainty of the benefits being substantial enough to warrant its continued use are concerns for many faculty members.
4. TICCIT does not pose a potential threat, but faculty see a possible change in their roles.
5. More positive attitudes about TICCIT appear to be evident among faculty who have taught in the program the longest.

TICCIT and Non-TICCIT faculty displayed a certain amount of receptiveness, with reservations, to the use of CAI, on the Alexandria Campus. Attitudes showed no firm commitment regarding the beneficial effects of TICCIT on student learning. TICCIT's impact on instruction and teacher role generally reflected positive attitudes.

2.4.2 Campus staff attitudes toward TICCIT. Toward the end of the Spring quarter, 1977, all faculty and staff on the Alexandria Campus whose opinions about the TICCIT system had not been previously recorded in the interview study were asked to respond to an opinionnaire (see Appendix F). Of 141 sent out, 49 were returned; several were incomplete. The breakdown of responses by division is shown in Table XV.

TABLE XV

Respondents to TICCIT Opinionnaire

Business (1 interviewed)	8
Math & Natural Science (19 interviewed)	3
Learning Resource Center	9
Humanities (20 interviewed)	7
Social Sciences (3 interviewed)	8
Counseling	5
Continuing Education	4
Health & Public Services	1
Visual Arts & Engineering	4

The responses are displayed in Table XVI as a percentage of the number completing each item. An examination of the table reveals that about one-third of the respondents gave a neutral answer to most items. Another third or more had positive reactions to the questions. Some observations from these responses are summarized as follows:

- 66% felt receptive to TICCIT from the beginning
- 73% believe TICCIT is a viable alternative for achieving instructional goals
- 50% believe TICCIT has a positive impact on student achievement while 40% are not sure
- 74% would recommend a TICCIT course to students
- 53% feel they have a positive attitude toward TICCIT's impact on campus while 41% are not sure
- 77% believe TICCIT is NOT a threat to faculty jobs
- 53% would like to teach on TICCIT
- 53% think TICCIT could be used in their subject area and 26% don't know

It can be concluded from this survey that the presence of TICCIT on the Alexandria campus over the past three years has not affected a large segment of the teaching staff at all. Those who have familiarized themselves with it either personally, through student contact or through their colleagues, have a generally favorable impression about its performance. Clearly, there are faculty members who would like an opportunity to experiment with their subject matter on TICCIT.

The large percentage of answers in the NOT SURE category indicates that more information about the outcomes of the TICCIT Experiment must be made available to the campus community. Future development and usage of TICCIT will depend largely on the interest and awareness of the faculty.

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TABLE XII

Respondents to TICCIT Interview

Years of Teaching Experience

	ENGLISH		MATHEMATICS	OTHERS NON-TICCIT		
	TICCIT	NON-TICCIT	TICCIT	BIOLOGY	CHEMISTRY	SOCIAL SCIENCE & BUSINESS
	1.5	5	2	6	7	5
	4	6	9	7	9	5
	5	7	9	9		11
	5	9	9	9		16
	8	10	10	10		
	10	12	12	11		
	13	14	13	12		
	14	17	18	16		
	14	24	28			
	16					
	30					
Totals	120.5	104	110	71	16	37
Mean	10.95	11.5	12.2	8.9	8	9
	N = 11	N = 9	N = 9	N = 8	N = 2	N = 4

TABLE XIII

Respondents to TICCIT Interview

Distribution by Rank

	TICCIT Number	NON-TICCIT Number
Professor	2	3
Associate Professor	4	9
Assistant Professor	8	7
Instructor	6	4

TABLE XIV

Respondents to TICCIT Interview

Distribution by Age Range

	TICCIT Number	NON-TICCIT Number
20-29	3	1
30-39	11	15
40-49	1	5
50 +	5	2

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2.5 OTHER IMPACTS OF TICCIT

2.5.1 The teacher's role in TICCIT. Since TICCIT began at Alexandria Campus many changes have taken place in the ways that it is used as a means of instruction. The English faculty have used the system as a laboratory aid for the ENGL 111 (Composition) courses, as an adjunct to classroom instruction in some English Composition and Verbal Studies classes, and as the main source of instruction in the ENGL 110 (Grammar) course. The initial plan for Math was to use TICCIT in the same manner as workbooks had been used in the programmed instruction remedial mathematics courses, but it was learned during the first year that the strengths of TICCIT could be used better if the instructional methodology for utilising TICCIT were redesigned.

The TICCIT instructor's role, regardless of how or to what extent TICCIT is used in a particular course, includes helping students with immediate problems, helping students use the TICCIT features effectively, showing students the interrelationship of the skills they are learning, and motivating the students.

In the introduction to the course, the instructor attempts to determine the skills entry level of each student, then prescribes a listing of topics to be completed. Next, a quickly achievable goal is suggested for each student, related to the student's self-confidence level. For some students this might be an entire lesson, for some others, five practice problems. The purpose is to build confidence in the system and the student's own abilities and to help the student keep the vast amount of course material within a manageable perspective.

The role of the teachers during the first two weeks is therefore, to help the students become comfortable with the mechanical operation of the system. During this time they are looking for anxiety among students. When it appears, the instructor intervenes to help the student get back on the right track. Since instructors are aware of the TICCIT material, where each student is within the course, and where students generally have problems, they are able to anticipate trouble and give special attention before the difficult material becomes a stumbling block.

Once the students know the mechanical operation of the system, the instructor's attention shifts to supplying motivation. Helping students synthesize the skills they have learned and helping them progress at a reasonable rate are routine duties. Instructors encourage students to set larger goals for a given time span and discuss with them the various alternative techniques for learning the material.

After several weeks, the teacher knows the special learning problems of students who are not progressing well, and more time is spent working individually with those students to help them to make satisfactory progress.

In general, the teacher emphasizes the need to know each student as an individual, discussing students' past experiences and their career plans. By knowing each student's goals, the teacher can counsel, advise, and motivate each student individually. By allowing the TICCIT system to take over much of the delivery of instruction, they can concentrate on creating a healthy learning atmosphere for each student and giving extra individual attention to those students who learn in different ways and at different rates. They also encourage students to interact with one another.

In order to teach in this way, TICCIT instructors must have the following special skills:

1. To know how to use the keyboard and all the special keys to access tests, move among the various MAP levels, and so forth.
2. To know the courseware well enough to locate where particular concepts are taught, and to be familiar with TICCIT definitions.
3. To know how to interpret advisor messages, such as the difference between "you must" and the "advisor recommends"; and to understand the practice score tables and test result tables.
4. To know the meaning of box colors.
5. To be familiar with special features such as multi-part questions, glossaries, and the HELP key.
6. To be informed about the student menu features, mail-box, change password, and talking terminal-to-terminal, and to become proficient in using the mail-box option to communicate with students about their progress, to write mini-lectures to clarify instruction, etc.
7. To know how to read weekly reports to determine satisfactory progress and to prescribe remedial assistance.
8. To know how to orient students to the system. While learning lab proctors are available and trained for this activity, a faculty member may wish to include information on the educational strategy behind TICCIT, course objectives, grading policies, or other details pertinent to his/her course.
9. To know how to perform proctor functions: C (to change box colors), T (to allow third test attempts or to erase a record of an attempt), and R (to log off and save results of a test in progress).

10. To assist students in looking through lessons and to clarify ambiguous material; this will be necessary until current revision is complete.

11. To provide students with encouragement and support while becoming familiar with this different classroom setting, the instructor should circulate among terminals as well as provide for individual help during and outside of class.

12. To coordinate off-line supplementary materials with those on-line in order not to confuse the student.

13. To coordinate with Learning Lab staff by informing proctors of course requirements, grading policies, special assignments and guidelines for dealing with contingencies related to that course.

14. To have a contingency plan in case the system malfunctions.

2.5.2 Training of TICCIT faculty. The original plan for the demonstration period of the TICCIT Project called for training faculty who would be using TICCIT in their teaching. The Natural Science and Mathematics Division and the Humanities Division thus devised appropriate procedures. (See Appendix G.)

First, faculty members were familiarized with the skills and activities listed above. A tape and script orientation for faculty was made available in the Learning Lab and instructional assistants assigned to TICCIT helped explain the mechanics and the content of TICCIT. Faculty members being introduced to TICCIT also observed current TICCIT teachers in action and discussed strategies with their colleagues to become aware of the TICCIT classroom setting. Finally each instructor signed on to the system as a student.

At present nearly all of the full-time English and math faculty have been fully oriented to TICCIT. In Mathematics, all appropriate faculty have taught at least one course with TICCIT, and some part-time faculty in Math, English, and Verbal Studies have also been assigned to teach TICCIT sections.

2.5.3 The influence of TICCIT on faculty activity. A description and analysis of faculty activities, both TICCIT and non-TICCIT, has revealed the influence of the TICCIT system upon faculty workloads.

Method

Eighteen full-time faculty members from Math and English were selected to participate in this survey. Part of the teaching load of nine of the instructors was in the TICCIT system, while the remaining nine taught by another method, generally Lecture/Recitation/Discussion or independent study. Five had forty to

sixty percent released time for other College work. The breakdown is as follows:

	T	N-T	Total
English	6	3	9
Math	4	5	9

A modified version of the WICHE NCHEMS* Faculty Activity Analysis was used to collect data on faculty activities. In this instrument, descriptors of faculty activities were listed and a daily diary form was provided. For the week of April 14-20, these faculty members kept time diaries of the listed activities. The collected data was analyzed for similarities, collated, and put into tabulated form. The same procedures were followed during the 9th week of the quarter, May 31-June 6, for comparison purposes. Sample instruments are found in Appendix J.

Results: Faculty members who teach in the TICCIT system are released from most preparation and administrative activities, since teaching modules, tests, and grades are stored in the computer. TICCIT instruction also allows the instructor to spend more time with the individual student, to diagnose a student's weaknesses, assign prescriptive work to assist the student to correct deficiencies, and confer with the student.

As shown in Tables XVII and XVIII, the largest time differential is in the Hours of Preparation and Administration column. The faculty appear to spend 45 percent of their total activity time in preparation and administration when using the more traditional lecture/recitation/discussion style of teaching, whereas TICCIT faculty spent 10 percent of their total activity time on preparation and administration for TICCIT classes and 24 percent of their time on non-TICCIT class preparation.

Another finding is the difference in the mean number of hours of faculty professional activities. The mean for non-TICCIT faculty is 47.1, while the mean for TICCIT faculty is 41 hours. The 6.1 hours difference may be related to the length of preparation time.

There was a difference of over 200 in the enrollment figures, with non-TICCIT faculty having the larger figure. These figures, however, may be accounted for by the amount of release time granted some TICCIT faculty, which amounts to 1.4 FTEF.

Certain other factors were considered in regard to their influence on faculty activities, but they did not seem to effect the way in which faculty spent their time.

* Western Interstate Commission for Higher Education, National Center for Higher Education Management Systems.

Discussion and conclusion: Because of the many problems and exceptions associated with this study, no generalizations can be drawn. The sample size was restricted because only nine faculty were using the TICCIT system of instruction and the matching group had to be the same size.

TABLE XVII

Faculty Activities (9th week of quarter)

	TICCIT FACULTY N = 9				NON-TICCIT FACULTY N = 9	
	TICCIT Classes		Non-TICCIT Classes			
Activities	Total hours	% of time	Total hours	% of time	Total hours	% of time
Formal contact hours	50.5	11.8%	60.5	14.1	122	25.9%
Other contact hours	14.3	3.3%	4	.9	54.8	11.6%
Hours of preparation & Administration	37.9	8.8%	109	25.4	194.8	41.4%
Unscheduled teaching	9.3	2.2%	4.6	1.1	13.2	2.8%
Academic advising						
Course and curriculum development			2	0.5	22	4.7%(3)
Research, scholarship, creative activity, professional development			57.6	13.4	18.5	3.9%
Student oriented services						
Administrative duties	10.1	2.4%	24.9(2)	5.8	7.5	1.6%
Committee, division, staff meetings	4	0.9%	40.5	9.4	37.5	8.0%
Public Service						
TOTALS	126.1		303.1		470.3	99.7%(4)

2. 2 subjects were assistant division chairmen with 40% release time each for administrative duties. One person is president of the College Senate with release time.
3. The second set of figures in this box refer to release time for 2 faculty members who are authoring and revising TICCIT courseware.
4. TICCIT faculty do not teach solely on TICCIT and the use may be adjunctive.

TABLE XVIII

Faculty Activities (3rd Week of Quarter)

Activities	TICCIT FACULTY[1] N=9 TICCIT Classes Total hours	% of time	Non-TICCIT Classes		NON-TICCIT FACULTY N=9 Total hours	% of time
Formal contact hours	50.5	13.68%	60.5	16.4%	122	28.8%
Other contact hours	16	4.0 %	17	4.6%	43.9	10.3%
Hours of preparation & Administration	37.25	10.0 %	90.5	24.5%	194.25	45.8%
Unscheduled teaching	10.25	2.7 %	4.5	1.0 %	7.5	1.7%
Academic advising	1	.2%			2	.4%
Course and curriculum development					2.75 23.5	.6% 5.5%[3]
Research, scholarship, creative activity, professional development			21.75	5.9%	26.2	6.0%
Student oriented services					4	.9%
Administrative duties			48.25	13.0%[2]	1	.2%
Committees, division, staff meetings	2.5	.6%	4	1.0%	20.5	4.8%
Public Service			5	1.0%		
TOTALS	117.5		251.5		423.7	

2. 2 Ss were assistant division chairmen with 40% release time each for administrative duties. One person is president of the College Senate with release time.
3. The second set of figures in this box refer to release time for 2 faculty members who are authoring and revising TICCIT courseware.
1. TICCIT faculty do not teach solely on TICCIT and the use may be adjunctive.

ADDITIONAL FACTORS THAT MAY INFLUENCE FACULTY ACTIVITIES

	TICCIT FACULTY T	TICCIT FACULTY NT	NON-TICCIT
		4.	
Enrollment	626		839
Credit hours	45	61	122
Average hours per week	41		47.1
Total yrs. tchg. exp.	86.5		96
Mean no.	9.6		10.6
Total at NVCC	63		61
Mean no.	7		6.7
Tchg. exp. above community college level	1		26
Tchg. exp. below community college level	17		6
Age distribution:			
20-29	1		1
30-39	6		5
40-49	1		1
50+	1		2
Mean and Mdn age for both groups = 30-39			
Rank distribution:			
Instructor	2		2
Assistant Professor	3		4
Associate Professor	3		3
Professor	1		0

NON-TICCIT courses were all Lecture/Recitation/Discussion except for one Independent Study class.

4. TICCIT enrollment was combined because in the English composition classes TICCIT is prescriptive to overcome grammar deficiencies.

2.5.4. Impact of TICCIT on mathematics teaching loads. Because of space constraints and the attempt to keep variables to a minimum during the initial experimentation with TICCIT, TICCIT was treated initially as an adjunct to the usual classroom situation rather than a whole new mode requiring a completely new use of human skills.

Periodic review of our experience with TICCIT has led to very useful consideration of the many alternative modes for use of teacher and CCIA time and other avenues of improved quality and improved cost effectiveness in the use of TICCIT.

The math staff use a scheme whereby two teachers start off a section of students. After the initial phase, during which students need much individual attention as they learn how to use the keyboard and become familiar with the learning system, there are double the usual number of faculty members. During this early period, late entrants need a special individual orientation.

Once the students have adjusted to the system itself and have started on the courseware, the need for the degree of individual attention tapers off markedly, and the auxiliary teacher is no longer needed. This approach means a great deal of time put into the course at the start, whcih is compensated in the latter part of the quarter.

The math faculty forsees the possibility of one master teacher to manage the overall curriculum on TICCIT, institute changes in courseware, and supervise the work of highly competent instructional assistants working directly with students of TICCIT. The role of the teacher may become twofold. On the one hand, the teacher will be the very personal advisor to a fairly large number of students whose learning on TICCIT he manages and to which he adds the human touch. On the other hand, the teaching faculty will make periodic changes in the courseware as part of an ongoing refinement of the mathematics taught.

In summary, TICCIT has thus far had relatively little impact on teacher scheduling. However, the groundwork has been laid to experiment with innovative teaching modes to explore means of optimizing the strong points of TICCIT and at the same time optimizing the use of human resources.

2.5.5 Impact of TICCIT on English Teaching Loads. TICCIT sections have been used, for the most part, to accompany regular English 111 classes. These sections have, therefore, increased or diminished in exact proportion to our scheduling needs for English 111 with Lab. At present, there are more Lab sections because we have tightened up the objectives for English 111 in order to more adequately prepare students for subsequent composition courses. The increase in TICCIT Labs is due to a better grasp of student needs rather than TICCIT itself. An excellent use of TICCIT is English 110--a Review of English grammar. This course lends itself to TICCIT instruc-

tion. There are currently four sections of English 110; growth in this area can be expected.

Used adjunctively, TICCIT has had no impact on faculty student loads. For English 111 this load is 22 students per section and five sections per faculty member, a total of 110 students per quarter per faculty member. For effective teaching in English 111, this number should not be increased. Used independently, as in English 110, the student load could conceivable be increased on TICCIT. A faculty member could possibly handle 1 1/2 times as many students; that is, each section of English 110 could be increased from 20-22 to 30-33 students without any difficulty whatsoever.

Used adjunctively, TICCIT has had no impact on the use of classroom space; it provides a most valuable Lab situation for review and individual assistance to students. In English 110, TICCIT, only the Lab is used and no classroom space. In this case, th distribution of Lab space becomes crucial and problematic; we still have space difficulties.

2.5.6 Impact of TICCIT on Learning Laboratory staffing and space utilization. There is a rough balance between the usage of TICCIT, expressed as a percentage of the total usage of the Alexandria Learning Laboratory, and the amount of resources committed to it. Usage of TICCIT has varied from 48 per cent of total usage in the Fall Quarter 1976, to 54 per cent of total usage in the Spring Quarter 1977. TICCIT consumes space and staff time in approximately proportionate amounts to its use (See TABLE XIX and XX).

TABLE XIX

Learning Laboratory Space Allocation and Usage

	Per Cent of Lab Space	Per Cent of Lab Usage	
		FALL	WINTER
Audio Laboratory	.12	.17	.10
Reading Laboratory	.24	.16	.15
TICCIT	.54	.48	.525
Testing Service	.09	.19	.225

Total Learning Laboratory Stations: 168

Audio Laboratory	20
Testing Service	16 (10 with back-up TICCIT capability)
Reading Laboratory	41 (8 with wiring for TICCIT terminals.)
TICCIT	91

Learning Laboratory Staff Time Allocation (weekly)

Employee	TICCIT Hrs.	TICCIT Per Cent	Non-TICCIT Hrs.	Non-TICCIT Per Cent
John Beaudry	32	80	8	20
Kaye Burke	28	70	12	30
Joan Burkgren (1/2)	4 1/2	22	15 1/2	78
Maxie Legarreta (1/2)	**	**	20	100
Patricia Rodgers	26	65	14	35
Linda Schwarz	26	65	14	35
Yoko Spalding	**	**	40	100
	116.5		123.5	

Total Hours:	240
TICCIT:	116.5
Non-TICCIT:	123.5
% TICCIT:	48%
% Non-TICCIT:	51%

There is, of course, an interactive relationship between the usage of TICCIT and the amount of resources committed to it. Were TICCIT to decline in either space or staff time consumed, it is reasonable to assume that either existing activities would expand or new activities would be introduced to fill the vacuum.

There is little doubt that the usage of TICCIT (over 49,000 hours during the 1976-77 academic year), justifies the present level of resources committed to it. It should be noted, however, that the Learning Laboratory shares with the rest of the campus a critical shortage of space. The testing service is especially overcrowded and poorly placed. This service administered almost 21,000 tests during the 1976-77 academic year, while having only twenty seats assigned to it. In addition, there exists little possibility of introducing any major new activity to the Learning Laboratory because there is simply no space available for one.

TICCIT, then, is both a limiting factor and the largest single service of the Alexandria Learning Laboratory.

Staffing of TICCIT. The Learning Laboratory has been fortunate in obtaining the services of four highly competent individuals to serve as TICCIT proctors during the current academic year. The performance of these individuals, and the attempt to train other members of the lab staff, have pointed out an important factor relevant to the training of TICCIT staff.

The unsuccessful attempt to train one member of the Learning Laboratory staff this year for TICCIT proctoring has demonstrated that the skills necessary

for successful proctoring are not easily specifiable. It is possible for an employee to have the ability to perform all the proctor and attention commands, to have the appropriate academic background, and yet be unsuccessful as a TICCIT proctor.

This is because the key characteristic of a successful TICCIT proctor is the ability to diagnose the source(s) of a problem (be it system or content), coupled with an ability to see multiple solutions to the problem. These characteristics are not likely to be cultivated in any standard staff development program. Thus, an employee may have the abilities necessary for a competent performance in other areas of the Learning Laboratory and still not be a competent TICCIT proctor.

Staff and space utilization. Because of tight staff and space resources, coordination of planning for the use of lab staff and space for TICCIT classes is important. The crowded conditions of the campus leave little room for maneuver in this regard. It should be noted, nonetheless, that the area assigned for the meeting of TICCIT English classes is particularly susceptible to disruption from noise and traffic. This area seems to be a natural meeting place for faculty and students as they change classes or go from one office to another.

2.6 Cost Analysis. The assessment of cost performance is critical in the evaluation of a system like TICCIT. It is also a complex problem, requiring a variety of specialized professional skills. When the TICCIT Project was first funded by NSF, a cost component was included in the evaluation contract awarded to ETS. Ultimately, this was dropped from the Evaluation and no further provisions were made for any in-depth analysis of the financial impact of TICCIT on the community colleges.

When the 1976-77 TICCIT Project was proposed at NVCC, the question of cost was once more included. Questions about the instructional cost of computer-assisted instruction compared to established instructional methods were posed and researched. The findings and conclusions are the subject of this section.

Findings The TICCIT system was assigned a separate budget code within the operations of the Learning Laboratory of the Alexandria Campus. All operational and maintenance costs were, therefore, clearly defined. The 76-77 FY allocation was $98,830. This figure represents the salaries for staff required to operate the system, and for staff added to the Learning Lab as instructional assistants for TICCIT, in addition to a maintenance contract for the equipment (see Table XXI). A sum of $45,000 was added to the budget in September, 1976, to finance the evaluation and courseware revision discussed in this report.

TABLE XXI

TICCIT OPERATING BUDGET 1976-77

Wages: (2 Lab Mechanics C's, 2 CCIA's)	$42,816
Hourly hire	$ 3,364
Supplies & stores	$ 1,250
Equipment	$ 700
Contract Services	$50,100
Duplication	$ 350
TRAVEL	$ 250
Total	$98,830

During the academic year, terminals are available in the Learning Lab for student use 59 hours per week (including Saturday mornings). Since the system is operated another 24.5 hours per week for such routines as systems checks, data reduction, authoring related tasks, etc., the total man-hours required to operate TICCIT are 83.5 hours per week. This represents a system operation cost of $22.76 per hour or $.20 per hour per terminal (113 available terminals). The computer is also run overnight to process the course materials authored each day by the faculty. This operation does not require operator attendance, however.

Over 49,000 hours of TICCIT use were logged by students in English and Math this year. Most of these students were registered for courses in which TICCIT was the main method of instruction or a laboratory adjunct to lecture/discussion meetings in a classroom. As it is pointed out in sections 2.5.4 and 2.5.5, there were few changes in the assignment of students and faculty to class sections as a result of using TICCIT. While the mathematics classes met almost exclusively in the laboratory, thereby effecting some space savings for the campus, many of the English classes were assigned classrooms concurrent with using the lab. Student/faculty ratios in these were not altered.

In order to make comparison with more established methods of instruction at the college, an effort was made to obtain data on appropriate instructional costs, but it was impossible to ascertain the components of the Discipline Unit Cost data provided by the state's Management Information System.

Another factor which contributed to the compounding of a cost analysis of TICCIT was the heavy adjunctive use recorded during the year. Adjunctive use is that use of the system by students who study individual modules on TICCIT, usually at the suggestion of their instructors. Since these students are already enrolled in courses, they do not register for any TICCIT course, do not pay a fee, and do not generate credits. This places TICCIT in the category of a learning resource not subject to the same cost accounting procedures as instruction.

Conclusions This study was unsuccessful in producing a cost performance evaluation of TICCIT at NVCC. However, some information can be related which provides insight into TICCIT's impact on institutional finances.

1. As long as TICCIT continues to be used in the present configurations, it represents an add-on cost of about $100,000 per fiscal year for operations maintenance and Learning Lab instructional support (excluding authoring support).
2. TICCIT can be viewed as a learning resource, in which case the cost should not be measured in credit hours generated.

3. SUMMARY, FINDINGS AND CONCLUSIONS, AND RECOMMENDATIONS

3.1 Summary

Summarily, TICCIT is an electronic communications system which was programmed initially to present instructional material in English and Mathematics. The period initial development and trial has spanned approximately five years. The development portion of the activity has continued throughout the entire period and implementation has involved approximately the last two years of the five year period. The following statements summarize the status of the development and implementation of TICCIT at NVCC, Alexandria Campus.

1. TICCIT has been used to present the entire content material in MATH 06 and 07 (Basic Algebra I and II), and English 110 (College Grammar); it has been used for portions of the content in English 111 (English Composition) and MATH 182 and 183.

2. TICCIT has been used to carry mainline instructional material in MATH 06 and 07 and in English 110.

3. TICCIT has been used adjunctively for portions of ENGL 111 and MATH 182 and 183.

4. TICCIT courseware, the total content, sequencing, and accuracy, for both Math and English has never been and is not now complete.

5. Courseware development in both Math and English has continued throughout the years of TICCIT, with the opportunity coming during 1976-77 for tailoring the material to institutional n

6. Some small courseware projects in disciplines and course content areas other than Math 06 and 07, 182 and 183, and English 110 and 111 have been successfully attempted.

7. All nine full-time Math faculty and five part-time faculty have been assigned to use TICCIT as an instructional mode. Some faculty members have more experience with its use than others.

8. Four full-time faculty have employed TICCIT for mainline instruction in the English 110 course. Ten of the full-time English faculty have employed TICCIT adjunctively in teaching English 111.

9. For the most part, students have been able to change sections of a course if they found severe incompatibility with the TICCIT machinery.

10. The instructional design of TICCIT expects mastery performance on each lesson.

11. Stand-alone authoring capability exists as a result of the 1976-77 project.

12. Definitive cost data are not available to allow precise comparisons of the common elements of TICCIT and non-TICCIT instruction. System operating costs are available.

13. Faculty and staff who have worked closely with the development and implementation of TICCIT and those who have not worked with it have been asked to express opinions, attitudes, and feelings concerning the use of TICCIT.

14. All terminals for student use are placed in the Learning Laboratory Some factors of the Learning Lab operations have been affected by this placement, i.e., scheduling, personnel work assignments and workload, and space.

15. The System's courseware capacity is now one hundred percent saturated.

16. Knowledge and understanding of the TICCIT System is not generally found outside of the two program areas and divisions in which the existing TICCIT programs are taught.

17. The operation of the TICCIT System has brought and continues to bring significant numbers of visitors to the campus. Generally, such visitors are interested in a demonstration of the courseware, preferably with hands-on experience, information as to the use of courseware in instructional programs, responses of students in terms of performance and attitude, responses of faculty, operational techniques and cost.

18. The development and implementation of TICCIT on the campus has absorbed a greater amount of time and energy than any other single instructional project.

3.2 Findings and Conclusions

The following statements reflect both findings and conclusions that can be drawn at this time from the experiences and involvement in the development and use of the TICCIT System and from the several formal evaluations conducted on TICCIT.

3.2.1 Courseware

1. Continuing courseware development is a major factor for the successful implementation of the TICCIT System.
2. Courseware development can be accomplished only through a team effort involving subject matter experts and instructional design

3. Investment in personnel resources to complete the revision and correction to the existing Math and English courseware is vital to the continued use of TICCIT in these areas.
4. Courseware development in all disciplines must be encouraged and supported, particularly in instructional areas that require sequencing, repetition, and highly structured material.
5. TICCIT courseware development should be approached in the same systematic way as are other instructional development projects; the instructional project design for the Alexandria Campus is well established and functions routinely.
6. Courseware development will continue as a cost element for the TICCIT System operation.
7. The acquired authoring capability must be maintained through planned training, updating, and development activities.

3.2.2 Instructional Implementation of TICCIT

1. Though not entirely generalizable, there appears to be a greater receptivity and interest to differing instructional techniques and new approaches to instruction among the faculty as a result of their involvement in TICCIT development and implementation.
2. TICCIT instruction, when used as mainline, is an alternative mode of instruction; therefore, TICCIT should not be the only method of instruction available to a student.
3. TICCIT, within the instructional program environment of the Alexandria Campus, appears to have high potential as an adjunctive or supplementary instructional resource.
4. TICCIT instruction must have flexibility in relation to starting time, exiting points, faculty workload, and ways to determine student credit hours.
5. TICCIT courseware should be developed for program areas in all divisions.
6. TICCIT material can be written to have an appropriate fit for NVCC course objectives and content, particularly in forms of modules or units.
7. Students do learn via TICCIT instruction as measured by performance scores.
8. The completion rate within the quarterly time frames is similar to that of other individualized modes of instruction.

3.2.3 Attitudes Toward TICCIT Instruction

1. Some students do not like self-paced, machine-based instructional modes. Some students prefer the TICCIT mode of instruction. Some students respond with no preference.
2. The Math faculty as a group tend to have a favorable attitude toward TICCIT as an alternative instructional mode.
3. Some of the English faculty reflect a very favorable and positive attitude toward TICCIT and others of the English faculty are not favorable in their attitude toward TICCIT.
4. For English Composition alone, the consensus is that TICCIT should be used adjunctively.
5. Except for those individuals whose philosophical position does not admit to mechanistic communications in the teaching process, the faculty who have not been directly involved in the use of TICCIT tend to see it as having potential for certain kinds of content and student uses.

3.2.4 Cost

1. Cost comparisons of the TICCIT System of instruction to other instructional systems are not possible at this time because not all cost elements of the comparative systems are available. TICCIT should be compared to both instructional mainline modes and instructional support areas.
2. Cost effectiveness figures are relative and judgemental. Cost data and scales specifying too much or too little costs are neither well established nor universally applied. The question as to whether TICCIT is cost effective is not answerable by cost data alone.
3. In analyzing the expenses connected with a system such as TICCIT, it is obvious that the total cost to maintain the system (its operation, courseware development, and hardware maintenance) is the same for one student or 1000 students per day used in either mainline or adjunctive mode.
4. A portion of the cost of maintaining the TICCIT System includes the cost of presenting the system to persons seeking both information about and experience with a computer assisted instruction system.

3.3 Recommendations

Given the long-standing and continuing commitment of the Alexandria Campus to provide educational programs and services which are characterized by flexible methods of instruction, and given the wide range of Alexandria Campus student abilities, needs, and learning styles, the TICCIT System, including its development and exploration, has been and is an appropriate project for campus involvement. Assuming acceptable and appropriate courseware, TICCIT provides an alternative and immediately accessible teaching source/learning resource. Used wisely and in keeping with proper use of any kind of learning resource, TICCIT is most useful when paired with human communication, an essential part of teaching. TICCIT provides an alternative instructional learning resource which is not available in any other mode due to its distinct instructional design and learner-control features.

A. Considering the present status of TICCIT implementation on the campus, the findings and conclusions from evaluations and from system operational experiences, and remembering the rapidity with which computer technology evolves and changes, it is recommended that TICCIT be retained for the immediate future (2-3 years) and that the retention be subject to the following specifications:

   1. Disk storage space be increased to accommodate courseware revisions and new courseware segments. (A purchase order was submitted on 23 May 1977; this will increase present courseware capacity by one-third.)
   2. Sufficient support for continued courseware revision in Math and English be provided to allow completion of that task. For the 1977-78 year, 1.6 full-time equivalent authors for English and 1.2 full-time equivalent authors for Math will be needed. Both the Math and English authors will need review and editing support from the faculty review committees as a matter of course.
   3. Effective planning must be done to stimulate development projects for the use of TICCIT in other course areas and divisions. In accordance with established campus procedures, instructional development projects to employ TICCIT need to be designed and implemented. This procedure includes the specification of amount of released time, technical support, and other resources needed to accomplish the project. Several projects should be given immediate

consideration, i.e., Biology Testing, Chemistry, Logic, Decision Theory, and Business subject areas. A minimum of three such projects should be undertaken for the 1977-78 year.

B. It is further recommended that:

1. With support and involvement at the College level, specific plans be made to share all phases of TICCIT operation throughout the College. Expansion plans need to be made according to expressed interest and specific program planning.
2. Continued monitoring and evaluation be done in a systematic way by the user divisions regarding student performance and retention.
3. Flexible enrollment, entry and exit processes be reviewed and implemented which will accommodate students in courses and modules on TICCIT. It is recommended that a special campus committee be appointed to investigate, draw up a proposal and work it through the existing policies and procedures. This group should be formed immediately.

C. It is recommended that a TICCIT Review Committee be continued throughout the coming year to monitor the development and use of TICCIT from a campus perspective. Membership on that committee is to be composed of the following:

Provost (Chairman)

Chairmen of all Review Teams for each TICCIT Instructional Development Project

Coordinator of the Learning Laboratory

D. It is recommended that TICCIT System Hardware changes be monitored and reported on a quarterly basis by the Coordinator of the Learning Lab.

1976-77 TICCIT PROJECT

Final Report

appendices

APPENDIX A

A Listing of Tasks Required
to Author for TICCIT

A Listing of Tasks Required to Author for TICCIT

The tasks involved in producing a module of instruction to be delivered via the TICCIT system fall mainly into two categories: content and format. The content must be determined by the subject matter expert (SME), i.e. the instructional faculty. The formating and packaging of the content can be accomplished by a trained instructional design technician (IDT).

There is a specific and somewhat rigid instructional strategy built into TICCIT. For this reason, there are well defined tasks which the SME must perform before turning a module of a course over to an IDT for inputting on the computer. The length of time required to complete this stage will depend on the amount of experience the faculty member has with writing programmed instruction and on the nature and length of the segment. A rough guideline for an average segment prepared by an experienced faculty member is 20-40 hours for the initial planning and writing. The steps,in the approximate order of perfomance, are listed below.

The tasks of the Subject Matter Expert

I. Do a task analysis of the content to be taught, in behavioral terms.

II. Write prespecifications on the lesson and segment level.

A. Lesson level.

1. Draw a lesson map (include prerequisite skills)
2. Do a Lesson Test Control (note what you plan to test)
3. Write a Lesson Objective (what will the student learn to do)
4. Write a Lesson Sequence Specification (recommend order of segments)

B. Segment Level.

1. Write a Segment Title.
2. Write a Segment Objective.
3. Do an Error Analysis: determine typical problems students have with the topic; make a note of specific feedback messages, if important.
4. Sketch an Example Message and an Example Help message.

5. Sketch a Practice Message and Practice Help, if different from the Example Help.
6. Minimum Critical Subset/Item Specification - a description of the types of items to use, listing critical attributes:
   a. Note divisions of skills into difficulty levels: easy, medium, hard; describe levels.
   b. Note ratios of ... types.
   c. Note total number of test items needed (if any).
7. Determine Divergency Indices -- how many easy, medium and hard items the student should see.
8. Write Sample Items: Include an example of each of the types of items specified in #6 above.
9. Write the First Draft of the Rule (generality) and Rule Help (or list attributes to be isolated in the Help).

With this information in hand, the faculty member will turn over his segment to the IDT for packaging and inputing. The steps followed by the IDT are listed on the Segment Status Sheet (attached). It should be noted that at the completion of each stage in the production, the SME is consulted in order to insure the final product is in accordance with the expressed instructional objective.

The length of time needed to complete this process depends on the length of the segment, the technical difficulties is presents, the availability of disc space on the computer and processing time required. Present estimates of from one to three weeks per segment (92.5 man hours average) are based on the production of the English and Math authoring teams this year who are a) experienced, b) working simultaneously on several segments, c) have two IDT's and 3.6 faculty members authoring full time and d) are revising existing courseware.

Until further experience with using TICCIT is obtained, it is recommended that the existing pattern for instructional development projects on the Alexandria Campus be used as the vehicle for expanding the course offerings

on TICCIT. A community college instructional assistant position in the Learning Lab has been designated to be the instructions design technician for TICCIT. This individual, under the supervision of the Coordinator of the Learning Laboratory, will provide technical support fo faculty whose projects are selected for development by the campus administrative staff.

SEGMENT STATUS SHEET (SSS)

Date _____

Program _____

Segment _____

TASKS	Assigned	Completed	Revised
1. Preliminary review of segment (A1 & A2)			
2. Writing of rules (A1)			
3. Review of rules (A1 & A2)			
4. Writing of pre specs (A1)			
5. Writing of specs (A1 or IPT1)			
6. Check specs with A1 (IPT1)			
7. Input specs			
a. B - File (IPT 1)			
b. B - File (IPT 1)			
c. sample items (IPT 1)			
8. Initial Debug			
a. Note Major Errors (IPT 1)			
b. Correct Errors (IPT 1)			
c. Process (IPT 1)			
d. Verify (IPT 1)			
9. Check with author (A1 & IPT 1)			
10. Write items with all stores (A1, IPT 1, both)			
11. Input (IPT 1)(A1)			
12. Secondary Debug			
a. find all errors (IPT 1)			
b. correct errors (IPT 1)			
c. process (IPT 1)			
13. Check with author (A1 & IPT 1)			
14. Review of segment by author (A1)			
15. Revisions			
Input (IPT 1)			
Verify (IPT 1)			
16. Final Debug			
a. note errors (IPT 2)			
b. Check with A1 (A1 & IPT 2)			
c. Correct or A1 (IPT 2)			
d. verify (IPT 2) / /			
17. The Absolute Final Debug			
a. segment review by A2			
b. New Revisions checked with A1 (A1 & A2)			
c. revisions input (IPT 1)			
d. verify (A1)			
18. Transfer to Prod Source (A1)			
19. Transfer to Source Rep (A1)			
20. Transfer Verified (IPT 1)			

APPENDIX B

A proposal for maintaining
a TICCIT Authoring Capability
at Northern Virginia Community
College

A Proposal for Maintaining a TICCIT Authoring Capability at NVCC.

It has been stated earlier in this report that NVCC has acquired the knowledge and skill necessary to produce and maintain courseware for the TICCIT system. Specifically, three faculty members from Alexandria, one from Woodbridge and one from Annandale, and two instructional assistants participated in the six-week training workshop offered by Hazeltine in the Fall of 1976. These individuals have since expanded their knowledge and expertise by being involved in authoring full-time during this academic year.

It is necessary to maintain and expand these capabilities. Most faculty will not devote full time energies to this activity. The instructional assistants, on the other hand, can and should be assigned to the specific function of providing technical and clerical assistance to any authoring effort.

In order to facilitate the involvement of other faculty and staff in developing materials for use on TICCIT, a plan like the following could be implemented.

I. Technical expertise. The intricacies of packaging, inputting and writing answer processing specifications require full time attention. They are skills which must be practiced in order to maintain facility. It is not recommended that these be faculty functions, except in the case where an individual were to receive a full-time appointment for this purpose. A CCIA position has been approved for the Learning Laboratory for an instructional design technician to perform these tasks. It will be the responsibility of the Coordinator of the Learning Lab to design an on-going in-service program to train other classified staff members in each of the authoring areas as back-up supports to the IDT (instructional design technician.) The incumbent in this position was trained last Fall and has been a part of the 1976-77 year authoring team.

II. Faculty Authors. The tasks which a faculty member must perform in order to develop a segment of instruction for TICCIT are described in Appendix A. Listed below are the general competencies and suggestions for their acquisition.

Competency	Acquisition
1. Knowledge of TICCIT's instructional capabilities.	Work through several lessons on TICCIT in student mode.
2. Skill in writing behavioral objectives.	Complete self-instructional lessons on behavioral objectives prepared by Courseware Inc. OR Attend in-service workshop on same.
3. Knowledge of TICCIT authoring components as listed in Appendix A.	Complete self-instructional materials from Courseware and Hazeltine under guidance of appropriate experienced staff member(s).

A general plan for disseminating information about TICCIT and the available support services should be generated by the campus. Appropriate staff to coordinate development and facilitate courseware development must be identified and assigned the task of planning and publicizing this instructional alternative service.

APPENDIX C

Memorandum written by
Ms. Margaret Liu
Re: Proposed Course Revision
of TICCIT English Materials

APPENDIX C

MEMORANDUM FOR INFORMATION AND COMMENTARY DATE: January 25, 1977

TO: Monica Sasscer, Director, TICCIT Project
TICCIT Committee
Irene Payne, Chairman
Kathleen Bassford René Martin
Jonathan Bryan
Bill Harrison
Diana Nichols
Barbara Seaman
Barbara Wyles, Assistant Division Chairman in English

FROM: Margaret Liu, Author in TICCIT English

SUBJECT: Proposed Course of Revision, TICCIT Course Materials

This memo outlines the proposed revisions of the English 110/199 course materials now on the TICCIT system. The suggested changes are the result of a painstaking analysis of several weeks' duration which took place after my formal training program ended. My thinking has also evolved through discussions with other members of the English faculty, my colleagues on the TICCIT Project, proctors of TICCIT English sections, students, and, recently, with Kathy Bassford, co-author in TICCIT English for this Winter Quarter.

Two guidelines which I tried to keep in mind were these: the stated objective in the official description of the TICCIT Project 1976-77 that "courseware revisions of TICCIT English will be 90% complete," and Dr. Netherton's rule of thumb that we are aiming to produce a revised course "we would not be ashamed of." It has become increasingly plain to me that these objectives cannot both be met within the time limits because of the scope of the job, even after the agreement was reached last quarter among those involved, including the TICCIT Committee and the TICCIT Review Committee, that (i) new material unrelated to English 110/199 and (ii) material pertaining exclusively to English 111 ("the left side of the TICCIT map") would not be attempted or revised.

The course materials I concentrated on were the 140 segments which comprise the present Units 13, 12, 8, 7, 5, 4, and 3, namely, the contents of English 110/199. They contain several units of basic grammar, one unit on punctuation and capitalization, and two units on sentence structure. Repeated study of individual segments and immersion in the material as a whole reinforced as well as modified my original impressions of the TICCIT course, and I list my conclusions below:

1. I am convinced that TICCIT is a potentially valuable teaching instrument for English 110/199, and should become even more useful in view of the fact that the number of students taking English 199 is increasing and likely to remain increased.

2. The organization of the present TICCIT course lacks coherence and a unified perspective, perhaps in part because of the considerable lack of continuity of personnel working on the project at BYU, and in part because the product now consists of an unassimilated amalgam of traditional and transformational grammar. It seems to me that the course works least well when the authors strove for a kind of "scientific grammar," aiming for a streamlined symmetry which English grammar does not possess.

3. The course tends to present grammatical terminology rather than stress an understanding of grammatical principles which the student can apply to his writing.

4. The course tends to reward the student for becoming "TICCIT-wise" in learning to pass the particular TICCIT tests without necessarily being able to transfer his knowledge to his writing.

After expending much time and ingenuity in trying to patch up the course rather than revise it (chiefly because I kept in mind the June deadline for completion of revisions), I have come to the decision that nothing less than a restructuring of the course will serve our purpose of providing a TICCIT course which will (i) aid the English 111 student in his writing by providing him with additional help in areas in which he needs help, and (ii) provide the English 110 student with a reasonably complete introduction to English grammar and usage.

A copy of the outline for the proposed reorganized course is appended to this memo. The course will consist of eight units, numbered according to the TICCIT system (i.e., read from the bottom up, from higher numbers to lower numbers). Each revised unit is followed by a detailed explanation of the changes. Whenever possible, the course has been shortened by deleting repeated material and adding appropriate cross-references. Segment 1 of each lesson will remain a review segment to allow the student who wishes to "test out" of the subject to do so by reviewing this segment instead of going through a whole lesson; the existence of this shortcut method built into TICCIT will be brought to the student's attention.

Some general policies which I will follow during the process of revision are listed below:

1. Clarifying the language of the rules when necessary (for unclear writing, see present definitions of "verbal," "predicate," etc.).

2. Changing and/or revising the practice problems when necessary (some segments now contain a considerable number of grammatical errors or fail to cover the salient points of the material; in other segments, the way in which the student is asked to respond is cumbersome or confusing).

3. Making the punctuation consistent throughout the course and removing eccentric use of punctuation (e.g., use of comma after initial "And, . . ." or "But, . . ." in sentences).

4. Eliminating spelling and typographical errors, of which there are many.

5. Removing inappropriate diction (colloquialisms and rapidly outdated expressions such as "pretty neat," "terrific," "lousy," "you're dynamite," and the word "really" used excessively).

6. Eliminating regional expressions understood by limited audiences (e.g., "skinnydipping").

7. Removing xenophobic and derogatory references to foreigners and to minorities.

8. Excising objectionable connotations (e.g., "Before I got downtown, I was propositioned twice.").

9. Raising the level of the content of the examples and practice problems from the trivial and faddish to the informative.

I would like to state that I am fully aware of the need to work rapidly as well as effectively. I intend to use as much of the existing course as possible for the basis of my revisions. I am also aware that without the present course before me to respond to, the task of revision would have been vastly more difficult. It may furthermore be obvious that I will not be able to complete more than a fraction of the revisions I have outlined here by June 1977. I have already written some new materials and made some revisions (please ask me for the locations on the "cd map"), although not enough to be able to estimate my rate of work with any accuracy. Given the support of my colleagues on the faculty, the administration, and the staff, however, I would like to continue working on what I consider to be a most worthwhile undertaking.

Margaret Lee

cc: Dr. Jean Netherton
Dr. Elaine Kiner

UNIT 8 The Sentence: The Basic Unit of Writing

LESSON 1 Words Are What They DO

SEGMENT 1 A Useful Key to Grammar: Words Are What They DO
SEGMENT 2 Words, Phrases, and Clauses
SEGMENT 3 Is a Part of Speech One Word Long?

LESSON 2 The Words in a Sentence

SEGMENT 1 How Do We Recognize a Part of Speech?
SEGMENT 2 Words Make Up Sentences: Parts of Speech

LESSON 3 What Is a Sentence?

SEGMENT 1 Subjects, Predicates, and Modifiers
SEGMENT 2 What Is a Sentence?

NOTE: READ ALL "EXPLANATORY REMARKS" PAGES FROM TOP TO BOTTOM

UNIT 8 The Sentence: The Basic Unit of Writing (Explanatory Remarks)

Objective: to provide a logical context for the material the student will learn in the rest of the course.

Teaching strategy:

1. To implant the concept that the sentence is the basic unit of discourse in English. The indispensable components of the sentence are the subject and predicate; each of these components may be qualified by modifiers.

2. To point out that the words which make up a sentence are classified as parts of speech more readily by function than by form. A word recognized as a particular part of speech in a particular sentence may function as another part of speech in another sentence.

3. To emphasize that, in English, a word which constitutes a part of speech can be replaced by a phrase or by a clause; again, recognition is easier if one analyzes function rather than form.

Changes from present course materials on TICCIT: (new--no corresponding present unit)

This is an entirely new unit, added for the reasons given above.

Special features:

This unit will omit all lesson tests, although the individual segments will contain practice problems emphasizing recognition of the concepts discussed. The elimination of tests is necessitated by the fact that as yet the contents (the actual parts of speech, etc.) will not have been presented to the student. The placement of the material in a TICCIT unit rather than in "minilesson" form is necessary to ensure that the student will treat this material in all other respects in the same way as he treats the rest of the course.

UNIT 7 Parts of Speech: Form and Function

LESSON 1 Conjunctions

SEGMENT 1 Conjunctions: A Brief Preview

LESSON 2 Prepositions

SEGMENT 1 Review: The Prepositional Phrase and Its Uses
SEGMENT 2 Objects of Prepositions
SEGMENT 3 Prepositional Phrases
SEGMENT 4 Prepositions

LESSON 3 Adjectives and Adverbs

SEGMENT 1 Review: What Modifiers Modify
SEGMENT 2 Adverbs
SEGMENT 3 Can Nouns and Pronouns Be Modifiers?
SEGMENT 4 Adjectives

LESSON 4 Nouns and Pronouns

SEGMENT 1 Review: Nouns and Pronouns
SEGMENT 2 Pronouns
SEGMENT 3 Nouns

LESSON 5 Verbs

SEGMENT 1 Review: Verbs
SEGMENT 2 Main Verbs and Auxiliaries
SEGMENT 3 Action Verbs and State-of-Being Verbs
SEGMENT 4 Forms of the Verb BE
SEGMENT 5 What Are Verbs?

UNIT 7 Parts of Speech: Form and Function (Explanatory Remarks)

Objective: to present the main parts of speech, with an emphasis on function as well as form.

Teaching strategy: introductory presentation of parts of speech--restriction to words; no phrases or clauses.

Changes from present course materials on TICCIT: (present Unit 13)

1. Segment on "Linking Verbs and Actic Verbs" now changed in content; linking verbs will be treated in connection with transitive and intransitive verbs.

2. Elimination of the term "verb phrase"; the contents of the segment will be retained and retitled "Main Verbs and Auxiliaries."

3. Lesson previously titled "Basic Elements of the Sentence" will be divided into two lessons, "Nouns and Pronouns" and "Adjectives and Adverbs." (Rationale: a. eliminates previous implication that verbs are not "Basic Elements of the Sentence"; b. reinforces the division of the material into subject, predicate, modifiers.)

4. Elimination of the term "noun phrase."

5. At present, nouns/pronouns in the possessive case are defined only as modifiers, not as nouns/pronouns. The practice problems and tests will be changed to allow either classification of possessives.

6. Present lesson on subjects and predicates will be shifted to the next unit.

General note on the definition of "phrase":

The treatment of the term phrase is confusing as well as inconsistent throughout the present course materials. The main reasons are listed below.

1. The student is asked to consider some types of phrases as consisting of ONE or more words. For instance, the underlined words in the following examples are defined as a "noun phrase" and a "participial phrase" respectively:

   Cats prowl nightly.
   Could I have a dozen printed cards?

   Such unfamiliar if not misguided definitions require strenuous mental agility in keeping straight which type of "phrase" is ONE or more words long, and which is TWO or more words long (e.g., "verb phrases" and "prepositional phrases").

2. A "noun phrase" is defined as a noun and its modifiers.
   A "verb phrase" is NOT defined as a verb and its modifiers.

3. The present definitions of "phrase" are likely to cause the student to confuse the intended distinctions among the following entities: noun phrase, simple subject, verb phrase, complete predicate, etc.

The proposed revisions are:

a. elimination of noun phrase, verb phrase, complete verb phrase, etc.
b. retention of prepositional phrase and verbal phrase (gerund phrase, participial phrase, and infinitive phrase).

UNIT 6 Recognizing Subjects and Predicates

LESSON 1 Subjects and Predicates Revisited

SEGMENT 1 Review: Recognizing Subjects and Predicates
SEGMENT 2 Predicates and Verb Complements
SEGMENT 3 Subjects and Their Complements

LESSON 2 Linking Verbs

SEGMENT 1 Review: Linking Verbs
SEGMENT 2 Adverbs in the Predicate Position
SEGMENT 3 What Does a Linking Verb Link?

LESSON 3 Transitive and Intransitive Verbs

SEGMENT 1 Review: Transitive and Intransitive Verbs
SEGMENT 2 Intransitive Verbs
SEGMENT 3 Transitive Verbs

LESSON 4 Objects of Verbs

SEGMENT 1 Review: Direct and Indirect Objects
SEGMENT 2 Indirect Objects
SEGMENT 3 Direct Objects

UNIT 6 Recognizing Subjects and Predicates (Explanatory Remarks)

Objective: by the end of this unit, to complete the presentation of the components of subjects and predicates.

Teaching strategy: the progression is through the following topics--direct and indirect objects of the verb; transitive and intransitive verbs; linking verbs and subjective complements; predicates and verb complements· review of subjects and predicates.

Changes from present course materials on TICCIT: (present Unit 12)

1. Lesson 4 on "Sentence Patterns" will be eliminated.
   a) The formulae are difficult for the student to remember because many of the component terms have not yet been presented, and therefore the student is asked to memorize symbols whose contents are unknown to him (I have verified my analysis with several faculty members, proctors, and students).

   b) The material can conveniently be presented throughout the course, and at the appropriate places instead of all at once, without recourse to the sentence formulae. These were added to the course, I believe, as much for the authors' convenience in referring to the material as for real pedagogic reasons. I feel it is hence worthwhile deleting the formulae and substituting more traditional terminology for the sake of the student's ease in assimilating the material.

2. The present division of the rest of the unit into "Action Verb Predicates" and "Linking Verb Predicates"--which erroneously implies that all verbs which describe a state or condition function as linking verbs--will be reorganized to emphasize these three categories: transitive, intransitive, and linking verbs. The potentially confusing term "predicate adverb" (very seldom found in standard grammar texts) will be replaced to clarify the salient point, which is that a linking verb links what comes after it to the subject (whereas a "predicate adverb" modifies the verb, not the subject).

3. The lesson on subjects and predicates, shifted here from its previous position in the preceding unit, now summarizes and places into context the materials learned so far in the course.

4. The glossary of grammatical terms will be shifted to a later unit.

UNIT 5 More About Verbs: Verbals; Tenses

LESSON 1 Verb Tenses

SEGMENT 1 Review: Using Verbs Correctly
SEGMENT 2 Illogical Shifts in Tense
SEGMENT 3 The Subjunctive Mood
SEGMENT 4 The Historical Present Tense
SEGMENT 5 The Future Tense
SEGMENT 6 The Past Tense
SEGMENT 7 The Present Tense
SEGMENT 8 Principal Parts of Verbs

LESSON 2 Drill in Irregular Verbs (OPTIONAL LESSON)

SEGMENT 1 Test: Irregular Verbs
SEGMENTS 2-7 Irregular Verbs--Lists A-F
SEGMENT 8 Regular and Irregular Verbs

LESSON 3 Verbals and Verbal Phrases

SEGMENT 1 Review: Verbal Phrases
SEGMENT 2 Infinitives and Infinitive Phrases
SEGMENT 3 Participles and Participial Phrases
SEGMENT 4 Gerunds and Gerund Phrases
SEGMENT 5 Verbals Cannot Function as Main Verbs

UNIT 5 More About Verbs: Verbals; Tenses (Explanatory Remarks)

Objective: to cover two obligatory topics on verbs, verbals and verb tenses, which do not conveniently fit elsewhere and which can be studied independent of the present organization of subject/predicate/modifiers.

Teaching strategy:

1. In the lesson on verbals, the student's attention is focussed on the fact that the verbal is a verb form which does not function as a main verb. Once this central idea is implanted in the student's mind, he is readier to see why something which looks like a verb functions as something else.

2. The review of verb tenses is supplemented by selected demonstrations of proper use of and illogical shifts in tense (basically the same material as in the present course).

Changes from present course materials on TICCIT: (present Unit 8)

1. The glossary of grammatical terms will be shifted to a later unit.

2. The lesson on irregular verbs, presently in the unit on "Verbs and Pronouns," will be placed in this unit as an optional drill. Thus students who may only need to refer to the dictionary to check on an occasional verb for its principal parts can now bypass this lesson, but the material is still available for students who need drill in irregular verbs and can use the computer terminal as a patient tutor.

3. The lesson on verb tenses will be placed in this unit. The terminology "BE form," "HAVE form," and "-ing form" will be replaced by the traditional terms and the organization of the discussion will be along the traditional lines of present, past, and future tenses. In other respects the material will not be altered.

4. The two lessons on "Conjoining" and "Subjoining" will be shifted to the next unit.

Summary: this unit now consists of material on verbs selected from present units 8 and 5; other topics previously in Unit 8 will be shifted to later units.

UNIT 4 Avoiding Faulty Agreement

LESSON G Glossary of Grammatical Terms (OPTIONAL)

LESSON 1 Subject-Verb Agreement

SEGMENT 1	Review: Subject-Verb Agreement
SEGMENT 2	WHO, WHICH, THAT as Subjects
SEGMENT 3	Collective Noun as Subject
SEGMENT 4	Indefinite Pronoun as Subject
SEGMENT 5	HERE-THERE Sentences
SEGMENT 6	Agreement--Linking Verbs
SEGMENT 7	Subjects Separated from the Verb
SEGMENT 8	Compound Subjects--OR/NOR
SEGMENT 9	Compound Subjects--AND
SEGMENT 10	Agreement--Auxiliary Verbs
SEGMENT 11	Agreement--Main Verbs
SEGMENT 12	Person and Number

LESSON 2 Unclear Pronoun Reference

SEGMENT 1	Review: Unclear Pronoun Reference
SEGMENT 2	Correcting Unclear Pronoun Reference
SEGMENT 3	Identifying Unclear Pronoun Reference

LESSON 3 Pronoun Case

SEGMENT 1	Review: Pronoun Case
SEGMENT 2	Formal vs. Informal Usage
SEGMENT 3	Nominative, Possessive, and Objective Case

LESSON 4 Pronoun-Referent Agreement

SEGMENT 1	Review: Pronoun-Referent Agreement
SEGMENT 2	Agreement with Compound Referent--OR/NOR
SEGMENT 3	Agreement with Compound Referent--AND
SEGMENT 4	Agreement with Collective Referent
SEGMENT 5	Agreement with Indefinite Referent
SEGMENT 6	Agreement in Number
SEGMENT 7	Pronoun Referents

UNIT 4 Avoiding Faulty Agreement (Explanatory Remarks)

Objective: to cover the grammatical topics necessary for an understanding of how to avoid errors in agreement of pronoun and referent, of subject and verb.

Teaching strategy:

The pertinent contents and straightforward order of presentation of materials in this unit have been retained; changes from the present TICCIT course are listed below.

Changes from present course materials on TICCIT: (present Unit 4)

1. The major change is the shift of the lesson on verb tenses to the unit which deals with verbs (revised Unit 5), so that only topics dealing with faulty agreement are discussed in this unit.

2. The glossary of grammatical terms, presently appearing twice in identical form, once in Unit 12 and again in Unit 8, will be shifted to the top of this unit as an optional appendix to which the student may refer. The method of gaining access to the glossary will be simplified from the present somewhat tedious one, and the glossary will appear only once in the course.

UNIT 3 Punctuation and Capitalization

The ideas for revision of this unit have not been completed. The accompanying Explanatory Remarks indicate the broad outlines of the projected revisions.

UNIT 3 Punctuation and Capitalization (Explanatory Remarks)

Objective: to teach proper punctuation and capitalization--the emphasis will not be on memorization of rules but on showing the underlying logic of these processes, i. e., the connections to grammatical or rhetorical sense.

Teaching strategy:

Punctuation--the division of the subject will be along the lines of end punctuation (a brief treatment of the period, question mark, and exclamation point), internal punctuation (greatest emphasis on proper use of the comma; some discussion of the semicolon, and a rather brief treatment of the colon and dash), and word punctuation (the apostrophe and a brief mention of the hyphen).
Capitalization--a summary of the obvious; more detailed treatment of more subtle usage, such as when and when not to capitalize a geographical location, etc.

Changes from present course materials on TICCIT: (present Unit 4)

The present organization of the unit on punctuation has considerable merit, for instance, in its integration of separate rules of punctuation into larger contexts ("Using Punctuation to Join Sentences" and "Punctuation that Separates and Sets Off"). But the particular plan of organization leads to the omission of several important topics, such as:

punctuation of items in a series
use of commas after long introductory phrases and clauses
use of commas to ensure clarity or to prevent confused or ambiguous reading.

The segment on punctuation of quoted materials makes an inadequate attempt to cover too much ground. The revised segment might be limited to material usually covered in English 110/199, leaving more detailed treatment of the subject to course materials intended for English 112.

UNIT 2 Expanding the Sentence

LESSON 1 Adding to or Reducing Sentences

SEGMENT 1 Review: Adding to or Reducing Sentences
SEGMENT 2 Reducing Several Sentences into One
SEGMENT 3 Adding detail to Form a Multilevel Sentence
SEGMENT 4 Absolute Modifiers (OPTIONAL SEGMENT)
SEGMENT 5 Ways to Add Detail

LESSON 2 The Multilevel Sentence

SEGMENT 1 Review: Diagramming the Multilevel Sentence
SEGMENT 2 Subordinate and Coordinate Levels
SEGMENT 3 Levels of Detail in the Sentence
SEGMENT 4 Positions of Free Detail
SEGMENT 5 The Base Clause
SEGMENT 6 Free and Bound Detail

LESSON 3 Subordinate Conjunctions and Their Uses

SEGMENT 1 Review: Subordinate Conjuctions and Their Uses
SEGMENT 2 Special Cases of Subordinate Clauses
SEGMENT 3 Adverb Clauses Function as Adverbs
SEGMENT 4 Adjective Clauses Function as Adjectives
SEGMENT 5 Noun Clauses Are Noun Substitutes
SEGMENT 6 Subordinate Conjunctions

LESSON 4 Coordinate Conjunctions and Their Uses

SEGMENT 1 Review: What Do Coordinate Conjunctions Join Together?
SEGMENT 2 Coordinate Conjunctions

UNIT 2 Expanding the Sentence (Explanatory Remarks)

Objective:

a) to look at sentence structure from the perspectives of joining parts of sentences together or joining sentences together;
b) to learn to add variety to sentence structure by adding or compressing details and modifiers.

Teaching strategy:

This is the first of two units which look at the sentence as a whole rather than as a string of parts of speech. Devices which affect the structure are discussed--coordination vs. subordination; joining, expanding, and compressing parts or sentences.

Changes from present course materials on TICCIT: (present Unit 7)

1. The two lessons from present Unit 8, "Conjoining" and "Subjoining," have been shifted to this unit. The more traditional terminology, coordinating conjunctions and subordinating conjunctions, will be used, and the functions of conjunctions will be stressed both in the contents and titles of the individual segments. The student is no longer asked to consider the comma, when it appears between two items in a series, as a coordinating conjunction (this particular instance of the "conjoiner" has been difficult for the student to grasp, and seems an unnecessary complication).

2. The contents of the lesson on multilevel sentences will be retained intact; this is a helpful lesson that introduces concepts which, especially when applied at the paragraph and essay levels, help the student to outline and organize his writing. These potentially useful applications will be pointed out to the student.

3. The two lessons on "Addition" and "Reduction" will be combined into the lesson titled "Adding to or Reducing the Sentence." The segment on absolute modifiers (a fairly sophisticated entity) will be made optional. The design of some of the practice problems in these lessons will be changed; at present they either require too much personal attention from instructor or proctor, or are cumbersome for the student to do (too much typing and editing required).

UNIT 1 Avoiding Sentence Faults

LESSON 1 Avoiding Sentence Faults

SEGMENT 1 Review: Sentence Faults

LESSON 2 Sentences Formed by Faulty Punctuation

SEGMENT 1 Review: Correcting Sentences Formed by Faulty Punctuation
SEGMENT 2 Spliced, Fused, and Run-On Sentences
SEGMENT 3 Sentence Fragments

LESSON 3 Shifts in Construction

SEGMENT 1 Shifts in Construction: Review
SEGMENT 2 Shifts in Number
SEGMENT 3 Shifts in Person
SEGMENT 4 Shifts in Voice
SEGMENT 5 Shifts in Tense

LESSON 4 Parall l Structure

SEGMENT 1 Parallel Structure

LESSON 5 IS WHERE and IS WHEN Problems

SEGMENT 1 Correcting IS WHEN/IS WHERE Problems: Review
SEGMENT 2 IS WHEN or IS WHERE

LESSON 6 Dangling and Misplaced Modifiers

SEGMENT 1 Correcting Dangling and Misplaced Modifiers: Review
SEGMENT 2 Interrupting Misplaced Modifiers
SEGMENT 3 Misleading Misplaced Modifiers
SEGMENT 4 Dangling Modifiers

LESSON 7 Concise Sentences

SEGMENT 1 Concise Sentences: Review
SEGMENT 2 Reduction
SEGMENT 3 Too Many AND's
SEGMENT 4 Wordiness

LESSON 8 Active and Passive Voice

SEGMENT 1 Changing Passive to Active Voice: Review
SEGMENT 2 Active and Passive Voice

UNIT 1 Avoiding Sentence Faults (Explanatory Remarks)

Objective: to present the fairly standard topics which are classified as sentence faults, and to show how to avoid these faults.

Teaching strategy:

This culminating unit for English 110/199 brings together a variety of commonly occurring faults which tend to mar sentence structure; the teaching strategy is a straightforward demonstration of do's and don't's.

Changes from present materials on TICCIT: (present Unit 3)

This unit is largely unchanged in design and content. Lesson 2, renamed "Sentences Formed by Faulty Punctuation," will be removed from the unit on punctuation and appears only in this unit. The only topic to be added, if the English faculty feels it is needed, is a segment on the distinctions between "like" and "as if."

APPENDICES D AND E WERE REMOVED FROM THIS DOCUMENT PRIOR TO ITS BEING SUBMITTED TO THE ERIC DOCUMENT REPRODUCTION SERVICE.

APPENDIX F

I. Statements and Qualifications
   Further Comments about TICCIT
      A. TICCIT Faculty
      B. Non-TICCIT Faculty
II. Interview Instrument
III. Further Comments from TICCIT Opinionnaire

TICCIT Faculty

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
			1. I felt receptive to the TICCIT project before it got underway.
Engl	M, A	2	I had many reservations, but I was curious.
			2. TICCIT is one of the most innovative developments in education today.
Engl	A	3	Yes, it is from a behaviorist point of view.
Engl	A	3	It is innovative among today's developments.
Math	M	7	It is innovative, but not necessarily the most innovative. It has a lot to say about general approaches and changes.
Math	M	6	There may be other developments that are more innovative.
			3. The TICCIT program allows for the integration and constant review of subject matter skills.
Engl	A	3	The machine is not capable of helping students make transfer, yet tests show they did.
Math	M	7	Focus of the program allows for this, but students don't take advantage of it.
			4. Student-instructor interactions are improved due to TICCIT.
Engl	M, A	6	Interactions can be improved quite effectively.
Engl	A	3	Interactions are no different than in other instructional settings.
Engl	A	2	There is more contact with students, but the quality is decreased. Stud are seen more, but we talk of trivialities.
Engl	A	3	Interactions are improved in a round-about way.
Math	M	7	The instructor becomes protective of students.
Math	M	7	Interactions are improved from a personal point of view.

Modes: M = Mainline
A = Adjunctively

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
			5. TICCIT is a viable alternative for achieving the instructional goals of the course.
Engl	M, A.	6	TICCIT is a great help, but not an alternative; one more means of achieving instructional goals.
Engl	M, A	2	It's an alternative, if not used mainline.
Engl	A	3	It's true for learning a large volume of rules of grammar, but there is little transfer. TICCIT is capable of teaching more than can be done in a classroom.
Engl	A	3	It's very useful adjunctively, but not mainline.
Engl	A	3	This is not applicable for all students.
Math	M	7	Certain revisions in the courseware have made it so.
			6. TICCIT is less convenient for students than a combination of classes and homework.
Engl	M, A	6	It varies with the students and whether their time is limited.
Engl	M, A	2	For the community college student, it is difficult and TICCIT takes time.
Engl	A	3	It is for the full time student who is also working. He can't take it home. The non-working full time student should find it convenient.
Engl	A	3	Certain advantages offset the disadvantages. Students can come in nearly any time except Saturday afternoon and Sunday. The flexibility decreases missed labs.
Engl	A	2	Working students have difficulty finding time to get here to do TICCIT hours.
Engl	M	1	It offers flexibility. A student can take notes and study at home.
Engl	A	3	Some students don't have time to spend in the lab, whereas they can read homework on the bus. TICCIT causes some

Modes: M = Mainline
A = Adjunctively

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
			students to spend more time with basics.
Math	M	7	In terms of access to feedback and equipment, everything is right here. Access to feedback is more convenient than in the class-homework situation.
Math	M, A	3	It depends on the student. A working student might take a TICCIT course for review, in which case it would be convenient.
			7. Students receive more individual attention from instructors, in the TICCIT program.
Engl	M, A	2	It depends on how the instructor handles the TICCIT class.
Engl	A	3	There's greater opportunity for more individual attention. Huge TICCIT classes get much attention, as do classes off TICCIT.
Engl	A	3	The mechanics of TICCIT make it necessary for student and teacher to interact one to one. (This person disagreed with #5 that student -teacher interactions are improved due to TICCIT!)
Engl	A	3	Yes, the time spent in the laboratory and the student can be taken off the machine by the instructor, for a conference. They may not otherwise utilize office hours.
Math	M	2	They do compared with lecture classes, but compared to other programmed instruction they don't receive more attention.
Math	M	7	It's possible, in one subject area it is an agreeable statement; in another it is untrue.
Math	M	7	They should receive more attention. It depends on the instructor and the number of students.
Math	M	6	"More" is a bothersome word. They receive as much as in other programmed instruction.

Modes: M = Mainline
A = Adjunctively

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
			8. In TICCIT classes students assume too much responsibility for their own progress in order to complete a course.
Engl	A	3	Only the highly motivated student completes the course. Those who are not highly motivated, need to be coerced.
Engl	M	1	Most students need constant reinforcement. They like to feel the nearness of a warm body.
Engl	A	3	This cannot be generalized, as some students do and some don't assume too much responsibility.
Math	M	7	No: Typically, they are given too much.
Math	M	7	Most students need self-motivation in any programmed instruction and many students do not have this. It is too much for many students.
			9. Working on TICCIT system improves students' learning strategies and study habits in other courses.
Engl	A	1	Much care is necessary in following directions in order to perform successfully. This carries over into other areas.
Engl	A	3	Students are now allowed control on mainline and the sophisticated student makes optimum use of TICCIT.
Math	M	7	The TICCIT approach does not necessarily match up with the classroom situation.
			10. TICCIT promotes self-confidence and a sense of accomplishment.
Engl	M, A	2	It does to a certain extent.
Engl	A	3	It does for the successful student; otherwise it does the exact opposite. Hopefully, this will be corrected when the material is revised.
Engl	M	1	It does for the motivated student.

Modes: M = Mainline
A = Adjunctively

TICCIT Faculty

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
Engl	A	2	Students with troubles and are weak are able to do well in "bite-sized chunks".
Engl	M	1	This cannot be generalized. It's true for some students and frustration for others.
Engl	A	3	It does if they finish.
Math	M	2	In the beginning stages, students were not successful.
Math	M	7	It also destroys self confidence when students have to repeat lessons several times.
Math	M	2	Some students are antagonized by the computer and it destroys self confidence in some.
Math	M	7	TICCIT does not promote self-confidence, but faculty management of it is important.
Math	M	4	Some types of students do beautifully.
			11. TICCIT has a positive impact on student achievement.
Engl	A	1	I do not see a carry-over in improved achievement in writing courses.
Engl	M	1	The majority of students are left with as many questions as they began with, even though course objectives have been achieved.
Engl	A	2	Students seem to drop TICCIT classes quicker than other classes. The proportion of students who complete the course, feel that they do it on their own.
Engl	A	2	Some students feel discouraged by the system. There is not always positive reinforcement.
Math	M	2	It sometimes depends on how a particular student relates to the format.
Math	M	7	The positive impact is only on the self-motivated.

Modes: M = Mainline
A = Adjunctively

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
			12. TICCIT has a negative effect on student attitude toward subject matter.
Engl	A	3	As TICCIT is now written, it has a negative effect on the majority of students.
Engl	M	1	Students were affected by the apparatus, but it did not affect their attitude toward the subject matter.
Engl	A	2	Many students feel frustrated by the machine and questions, therefore, the frustration "rubs off" on the subject. The English program is not as well constructed as it should be.
Engl	A	2	Some student don't react well to machines, therefore, get "turned off" from the course.
Math	M	7	A TICCIT problem can be spotted and dealt with immediately whereas in a classroom the problem may go home with the students.
Math	M	7	Yes, due to: lack of mechanical ability of assistants, frustrations of machine problems, applications to word problems and the system noting the answer wrong when it is correct.
Math	M, A	3	Students are taken out of the course if their attitude is negative.
Math	M, A	4	The original courseware was so tedious students were "turned off". This is no longer true.
			13. Course completion rates of TICCIT compare favorabl with other courses.
Engl	M, A	2	It is now true although it wasn't true for the first two quarters.
Engl	A	3	Some students have difficulty completing their assignments in the adjunctive mode.

Modes: M = Mainline
A = Adjunctively

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
Engl	M	1	Difficult terminology prevents students from going ahead on tests. Students are presently further behind than they should be. It takes longer to cover material on CAI.
Engl	A	3	Most students finished last quarter, there were some inadequacies in the courseware that prevented students from getting where they should. They will achieve goals this quarter since the instructor is more familiar with the material.
Engl	A	2	Five hours a week for 3 credits contributes to half the class dropping the course.
Math	M	2	Strongly disagree, although the rates may have changed over the last year.
Math	M	7	Lecture courses have the best completion rates.
Math	M	7	The rates compare favorably with other programmed instruction. They are not comparable to lecture courses, as they are too different. Students who are successful with programmed instruction may not be successful with lectures.
Math	M	7	Lecture - discussion completion rates are more favorable. Students tend to slow down, do more problems than needed, which results in non-completion. Student judgement is not always confident.
Math	M, A	4	No, it takes many students too long. Hopefully, revisions will change this.
			14. Student-tostudent interactions are hampered by TICCIT.
Engl	A	3	A sense of community is established as students work in the lab. They "get their heads together."
Engl	A	2	Students help each other all the time.
Math	M	7	They can be hampered. The faculty must work to make sure there is interaction. TICCIT has a tendency to isolate students.

Modes: M = Mainline
A = Adjunctively

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
Math	M	7	In the lecture discussion mode, most interaction takes place outside the classroom, whereas interaction in the TICCIT class can be seen.
Math	M	6	I formerly thought so, but students do seem to interact well in the lab. Flexibility of hours may be a variable.
			15. I would recommend a TICCIT course to students.
Engl	A	1	Students need to be producing not just responding as they do on TICCIT.
Engl	A	3	I'd recommend to highly motivated students only.
Engl	M	1	I would not recommend TICCIT to developmental students. I would recommend for students who want to devote extra time to a course.
Engl	A	2	I'd recommend to some students.
Engl	M	1	I'd recommend according to the student.
Engl	A	3	I'd recommend to particular students.
Engl	A	2	I would not recommend TICCIT to students who are very weak in their writing skills, but to those needing some kind of review.
Math	M	2	If all the kinks are worked out, I would recommend TICCIT to students.
Math	M	7	I would recommend TICCIT to certain independent students, who are self-disciplined and have drive. I would not recommend TICCIT to students who need direction.
Math	M	2	I'd recommend to some students.
Math	M	7	I'd recommend to the right students.
Math	M	7	I'd recommend to certain students.
Math	M,A	4	I'd recommend to some students.
Math	MA	3	I'd recommend to certain students. The big concern is to get the student in the right slot.

Modes: M = Mainline
A = Adjunctively

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
			16. I feel better about TICCIT now that I've taught in the program.
Engl	M, A	6	I feel good about TICCIT and did originally.
Engl	A	3	I could have felt better, but don't as it is now used.
Engl	M	1	I feel more informed, but not better.
Engl	M	1	There are terminology problems, but it has potential.
Engl	A	2	Disagree, I get frustrated by incorrect answers.
Math	M	1	I felt much better about TICCIT before I taught on it. Students are not able to complete the course in a quarter. There are errors in forms, students cannot do homework.
Math	M, A	4	I feel better for a minority of students.
Math	M	6	The publicity is good for the campus and we get a tremendous number of visitors. TICCIT is not stressed as strongly as it should be in other divisions.
			17. TICCIT is a potential threat to jobs of faculty members.
Engl	M	1	Instruction is needed to help clarify presentations on the machine (Disagree)
Engl	A	3	There is general agreement among faculty that TICCIT should not be mainline, but can adjunctively teach grammar - repetitive, mechanical.
Math	M	7	No, More faculty need to use TICCIT.
Math	M	7	Strongly disagree. It is an innovation that calls for give and take on both sides. It calls for rethinking what your job (role?) is.
Math	M	6	It is an omen for change in load, approach, preparation, etc.

Modes: M = Mainline
A = Adjunctively

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
			18. I would prefer to teach on TICCIT.
Engl	M, A	6	I would prefer TICCIT if I had a group of students who like TICCIT and are making good progress. TICCIT is sheer agony for some students and they should have the freedom to move to other modes of instruction.
Engl	M, A	2	I would prefer to use it adjunctively.
Engl	A	3	I would prefer it if the programs were improved and it is truly integrated in the classroom. I would prefer less material and would want it transferable.
Engl	M, A	6	I would prefer a mixture of TICCIT and lecture classes.
Engl	A	3	I would like to have it available to use when appropriate. It could be incorporated in the course syllabus.
Math	M	2	Students should be allowed to elect the course and there should be improvement in the system.
Math	M	7	I prefer student interaction.
Math	M	2	I would prefer it occasionally.
Math	M	7	I prefer using a number of instructional styles (methods?). I'd be willing to teach some TICCIT courses.
Math	M, A	3	I taught mainly on TICCIT this year and this is too much! There should be one course assigned at a time.
Math	M	6	The framework of TICCIT is restrictive. I enjoy teaching on TICCIT, but prefer the lecture method.
			19. There are greater demands on the instructor's time in a TICCIT class than in other classes.
Engl	A	1	There should be less demand as instructor s are not involved in planning and preparation.

Modes: M = Mainline
A = Adjunctively

TICCIT Faculty

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
Engl	M, A	2	Although relieved of class preparation, there are other duties that are time consuming, such as: papers written off line, technical and mechanical problems with the machine, individual student conferences, more counseling.
Engl	A	3	There is a reallocation of time; the demands are different, but the amount of time is the same.
Math	M	7	In the TICCIT course, the instructor is reacting to the desires and needs of students and there is less control of time allocation. In Math, there are more contact hours in the class room.
Math	M	7	Yes, the greater demands are in the interaction with students as well as the physical demands of being on one's feet all the time.
Math	M, A	4	There are less demands outside of class; no difference in demands in the class.
Math	M	6	The restricted time framework leaves no room for flexibility of contact for the teacher due to assignment of hours. There are no greater demands.
			20. The TICCIT system lends itself for use in subject area.
Engl	A	1	It lends itself if specific programs are put on it for specific students.
Engl	M, A	6	It lends itself to English grammar, but not literature.
Engl	M	1	It should be used as a supplement only.
Engl	A	3	For students who have never had grammar, TICCIT is an effective, easy way for them to run through the grammar. They would not spend much time on it with a book.
Engl	A	2	It lends itself for use in some areas, but it does not teach students how to write.
Math	M	2	It is adaptable to mainline use in basic math. Above this level it should perhaps be used adjunctively.

Modes: M = Mainline
A = Adjunctively

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
			21. As a decision maker, what would you do with TICCIT?
Engl	A	1	TICCIT should be expanded to meet specific needs of particular student populations. English for foreign students should not be relabeled, but programs should be written to meet their needs. Much of the TICCIT material is not useful for them. They know grammar, but not its use in writing. They enjoy using the computer and I see it as a resource aid. TICCIT should be used adjunctively.
Engl	M, A	6	On a long term basis, plan, open up and expand TICCIT into areas where it can best be used. I would not replace complete courses, but build modules for any subject field and a student can study the module when needed. Examples: a unit on poetry, facts, drills, problems of writing a research paper, how to write bibliography cards. If all have the opportunity to use TICCIT, then formality will be done away with and we have a tremendous teaching tool.
Engl	M, A	2	TICCIT sould be expanded to other disciplines. It should be used for testing, practice, adjunctively and for administrative tasks. I would never use it mainline. I would go slowly with TICCIT expansion, as courseware development is tedious and it should be improved before expansion.
Engl	A	3	I would expand TICCIT to any area where skill building is an essential. I would limit its use to English grammar. TICCIT is capable of being used for testing and practice, but the authors have not been trained in exercise writing.
Engl	M, A	6	I would expand TICCIT to other subjects, but limit its use to grammar and other mechancial subjects, as well as testing.
Engl	M	1	I would use it to a limited degree for practice only. Too many students go through units without accomplishing the test.
Engl	A	3	I would revise TICCIT, excise some material. TICCIT has potential and can be made to serve the college more effectively.

Modes: M = Mainline
A = Adjunctively

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
			21. Cont.
Engl	A	2	TICCIT should be used adjunctively. I don't think it's a panacea to take care of difficulties. It should be incorporated in the teaching program. It should not be used to sort out those having difficulty and shunting them off to complete units before they can join course. It should be used in conjunction with courses or as an elective.
Engl	M	1	I would put other subject matter on TICCIT and limit its use to practice only.
Engl	A	3	It would be useful to expand to other disciplines and use the system adjunctively only.
Engl	A	2	Expand to other areas, especially techniques of research paper writing. I would also use it for testing (not essay tests). TICCIT is good for learning facts and theories in other subjects. TICCIT should remain on campus and be used in a discriminating way. Students should be screened before enrolling in TICCIT classes and only those who can already write allowed admittance.
Math	M	1	Expand the system to other subjects and use it adjunctively for college transfer courses. Continue to use TICCIT for developmental courses. It could not be managed for advanced courses.
Math	M	2	Use TICCIT for testing and adjunctively. It's use should be explored in other subject areas besides English and Math. If it remains on the campus, there should be explorations of other ways of using TICCIT.
Math	M	7	I would use TICCIT for testing, adjunctively and for practice (for which it is particularly well suited).
Math	M	2	I would continue to teach Math courses in the mainline mode and English courses would be taught adjunctively. It would be too expensive to expand to other areas. Writing the material is particularly expensive. TICCIT is a more usable tool than it was in the initial stages. Faculty are learning to use it effectively and how to avoid it when it is not effective.

Modes: M = Mainline
A = Adjunctively

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
			21. Cont.
Math	M	7	There are ways to expand TICCIT all around the college, given the resources and I would expand it. It use would be limited to those areas having usable content. Courseware should be ready, before going on line. There are some problems in using TICCIT for math testing, but it may be viable for other areas. The total situation must be looked at before determining to use TICCIT for practice or adjunctively.
Math	M	7	TICCIT should be expanded adjunctively and in the mainline mode to other subject areas. It should not be used for testing as students have a tendency to enter answers that they do not intend to enter. The problem may be done correctly, but the wrong answer is recorded, perhaps due to the omission of a bracket or parenthesis. This problem gives students a negative attitude.
Math	M, A	3	Expand TICCIT to other disciplines and use it adjunctively for college level courses. (It is impossible to teach calculus this way.) Use it mainline for developmental courses, because of the mechanical skill drill. TICCIT testing shows up no better as a testing device than in regular classes.
Math	M, A	4	I would like to see subject field have the opportunity of experimenting with TICCIT. It could be used for practice. Foreign students have a unique opportunity for practicing grammar.
Math	M	6	I would expand TICCIT to other subject disciplines for adjunct use. It could be used for testing. TICCIT is not an inexpensive venture, therefore it should be constantly updated and improved. Instructional material on the system should support many different curricula and be brought into line.
			FURTHER COMMENTS ABOUT TICCIT
Engl	M, A	6	TICCIT has great possibilities and I'd hate to see it disappear. We need to identify the student who will benefit most by this mode of instruction. It will give some students a sense of direction they've never had before. Keep TICCIT and really

Modes: M = Mainline
A = Adjunctively

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
			work it up.
Engl	M, A	2	TICCIT lends itself well to modular use. All faculty should be made aware of what it offers and the student response which has been a pleasant surprise. It is positive. TICCIT has limitations for teaching composition, as it cannot qualify rules. It is either/or. It is good for reviewing grammar rules and basics. TICCIT teachers need much orientation, coordination and role clarification. Teachers have more feedback if they are attentive while students are at the computers. The teacher must be more aware of where each student is in the course; there is greater opportunity and responsibility to see whether a student is following his prescription.
Engl	A	3	I would like the system to remain, but politics are getting in the way, i. e. non-behaviorists are philosophically against the system. We need a specialist (consultant) to oversee test, practice and exercise writing to see if questions are meeting instructional objective. TICCIT can be a valuable asset.
Engl	M, A	6	TICCIT has great potential that is being realized by Alexandria campus use of it. My sole reservation is the cost of the program and we need aggressiveness to find faculty potential for teaching on it. For example, teaching a class of 60 people may offset the high cost. TICCIT grammar should be included at part of most students' programs as a service course; an add-on, not a displacement. Grammar on TICCIT could be used for ad hoc purposes; a student in socilogy who is having trouble should have the capability of getting appropriate units in grammar or rhetoric. The greatest asset of the system is its capacity for personalizing and trouble shooting. Faculty role changes include more time for letter writing, telephoning and individual conferences.
Engl	M	1	I object to TICCIT, because it tests more than it is designed to test; motor skills, typing skills, reading skills, comprehension, self-discipline, following and understanding instructions. It is time consuming. TICCIT can be very helpful to the highly motivated student, but very frustrating

Modes: M = Mainline
A = Adjunctively

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
			for developmental students to go through all of the above skills. The terminology is confusing.
Engl	A	3	The machine gets in the way of learning sometimes. The mechanics have nothing to do with age, as some of the best students are mature. There are typing problems for some students who can't type. A punctuation mark can cause the rejection of an otherwise correct response. The system requires typographical perfection.
Engl	A	2	Students may be learning how to take tests rather than subject matter and skills. Manipulation, conniving. There does not seem to be carry over from the terminal to writing or taking a test away from the carrel. I have ambiguous, mixed feelings about TICCIT, although I enjoyed teaching on it.
Engl	M	1	The terminology is very difficult. The instructors are unfamiliar with it and this poses a great problem for students in self-confidence. Students who could go ahead with tests are afraid to do so. The terminology is also contradictory. Students take it too literally, don't discriminate and often spend too much time on the material. Funds could be diverted to reading materials and faculty rather than TICCIT and it would probably be more benefical to students. Taking the cost factor away, TICCIT is a valuable alternative in a number of ways.
Engl	A	3	For the amount of time and money spent on TICCIT, it would have been much better spent in contact with students. I fear that this new gimmick will hang us up for awhile, then slowly die out.
Engl	A	2	TICCIT is useful of learning facts and terminology, but memorization from TICCIT does not carry over into writing. Students learn isolated facts.
Math	M	2	Students should have freedom of choice rathern than selecting a course and finding themselves in TICCIT. The system was not well developed when it was introduced to students which caused misunderstandings and problems.

Modes: M = Mainline
A = Adjunctively

Subject	Mode	Number Terms on TICCIT	Statements and Qualifications
Math	M	7	The cost of TICCIT will be larger than expected originally. The costs include highly qualified maintenance people (expensive), expensive replacement parts and support personnel. I question its cost effectiveness versus the cost effectiveness of traditional teaching methods. Completion and retention is better in the lecture situation. Certain type of students will benefit, because of their very nature, but not the majority. Students who do well, will do well with traditional instruction.
Math	M	7	TICCIT is still an infant and its future is dependent on the abilities of those teaching and administering it to see its usefulness and be willing to adapt to it. Administrators and supervisors can "make or break" the system for teachers. There should be super sensitivity. TICCIT is fixed, rigid, whereas in the classroom the teacher can realign, reallocate and make changes.
Math	M	7	Self-disicipline and motivation correlate highly with successful completion of TICCIT courses.
Math	M, A	3	TICCIT is a very individual type of instruction that needs many improvements to be effective, such as courseware revision, grading, standardization (how many quarters should a student be allowed to take to complete a course?). Most students take two quarters to finish while lecture courses are usually completed in one quarter.
Math	M	4	I would like to see a cost analysis, as TICCIT seems to be too expensive for the benefits derived from it. While the same faculty are used, extra personnel is needed for maintenance. What are the student outcome? Students do not rush to take the courses. TICCIT takes the humaneness and flexibility out of teaching and causes too much student frustration.

Modes: M = Mainline
A = Adjunctively

NON -TICCIT FACULTY

Subject	Statements and Qualifications
	1. I felt receptive to the TICCIT project before it got underway.
[illegible]ngl	Yes, if I had been teaching here at the time.
[illegible]ngl	I was open to learn about it. I was willing to accept it as an aid to instruction, but I did not see it taking over all freshman English.
	2. TICCIT is one of the most innovative developments in education today.
Engl	"Innovative" carries the connotation of beneficial and TICCIT is not beneficial.
Engl	It is one of the great new advances, but not the greatest. The television medium, as a form of instruction, is the coming thing.
Engl	It is an interesting development.
[illegible]ctg	I strongly agree if it is used properly.
	3. The TICCIT program allows for the integration and constant review of subject matter skills.
[illegible]gl	I agree in theory, but I'm not sure about practical experience.
Engl	Review is possible, but to integrate is questionable. Integration is my strong disagreement.
Engl	It does in its limited area.
[illegible]gl	I strongly agree that constant review is possible, but it does not integrate.
[illegible]ol	I think it has potential to do so, but I'm not familiar enough, with the program, to be definite.
[illegible]ol	In terms of what is supposed to be true of TICCIT, I agree, but would personally like to reserve judgement until I see the results of evaluations.
[illegible]ol	This is one of the important aspects of TICCIT. Immediate feedback is a strong feature.

a.

Engl English
Biol - Biology
Soc - Sociology
Psy - Psychology
Acctg - Accounting
Chem - Chemistry

Subject	Statements and Qualifications
	4. Student-instructor interactions are improved due to TICCIT.
Engl	I have a theoretical disagreement.
Engl	There is much personal interplay.
	5. TICCIT is a viable alternative for achieving the instructional goals of the course.
Engl	It would depend upon the course.
Engl	I agree if it is integrated as part of a freshman composition course.
Engl	It might be suitable for achieving goals for some courses.
Engl	"Viable alternative" is a questionable phrase and it should be well-defined. It is a viable alternative if used on an individual basis only.
Engl	As a tool for writing, I have seen no evidence of transference of the value of TICCIT in writing.
Biol	In some cases this is true, but not for achieving all goals. TICCIT is good for skill building, not problem solving.
Biol	This is dependent on students, circumstances; and motivation would have something to do with it.
Biol	Adjunctively, only.
Acctg	I agree if used as a supplement, part of a course package.
	6. TICCIT is less convenient for students than a combination of classes and homework.
Engl	It is less convenient, perhaps at present, because the program is so lengthy and has deficiencies.
Engl	It depends on the student and his particular commitment.
Engl	It depends on the student.
Biol	There are too many variables to give a response in this mode.

Engl English
Biol - Biology
Soc - Sociology
Psy - Psychology
Acctg - Accounting
Chem - Chemistry

Subject	Statements and Qualifications
	7. Students receive more individual attention from instructors, in the TICCIT program.
Engl	The comparison is not completely stated.
gl	From a personal viewpoint, I spend extensive time with students, although I don't teach in the TICCIT program.
ol	There seems to be potential for this, as the instructor should have more time to spend with the student.
ol	It depends on the size of the class.
ol	There is potential for this.
	8. In TICCIT classes students assume too much responsibility for their own progress in order to complete a course.
Engl	They should assume responsibility.
gl	I would agree due to student feedback.
ol	According to feedback from students, they do have to assume too much responsibility and they dislike TICCIT for this reason.
ol	You can't put too much responsibility on students. They should have all of it.
Acctg	It depends on how the instructor handles the course. Some misuse TICCIT.
	9. Working on the TICCIT system improves students' learning strategies and study habits in other courses.
ngl	This is an expectation for the potential of TICCIT, but we don't have any data to prove it.
ngl	There is no evidence of TICCIT to support this statement.
gl	TICCIT tends to lock students into rules and applications of rules, and it stifles innovation. While it is good for drill, it discourages creativity. Examples for rules have to be structured for right or wrong answers on TICCIT.
Biol	The impression is that it does not carry over as one had hoped it would.

c.

Subject	Statements and Qualifications
Biol	It has potential for students to learn to manage their time.
	10. TICCIT promotes self-confidence and a sense of accomplishment.
Engl	I am hopeful that it does, but I don't know.
Biol	I'm not sure that it does any more than any other class.
Engl	According the student opinion, it does.
Engl	It varies with the student. Some students say they are unable to deal with the machine and would rather have "live" instruction.
Chem	Some students have commented that they are more confident after a TICCIT course, than they were previously.
	11. TICCIT has a positive impact on student achievement.
Engl	I hope this will be the case.
Engl	I disagree, based on limited experience.
Engl	Student achievement, in terms of what?
Biol	Feedback from students is negative. It may have to do with the maturity level of the students. Also, older students may not like change.
Biol	It does have impact from the perspective of an unusual couple of students.
Acctg	The student who takes time is motivated to want to achieve.
	12. TICCIT has a negative effect on student attitude toward subject matter.
Engl	If this is true, it could decrease in some cases when the courseware is improved.
Biol	This can only be evaluated if one has taught a TICCIT class.
Biol	I agree, based on limited student feedback.
Acctg	Teachers have the negative effect.
	13. Course completion rates of TICCIT compare favorable with other courses.

Engl English
Biol - Biology
Soc - Sociology
Psy - Psychology
Acctg - Accounting
Chem - Chemistry

Subject	Statements and Qualifications
	13. Cont.
Chem	I disagree, based on discussion with students.
	14. Student-to-student interactions are hampered by TICCIT.
Engl	I agree, however, I think that this could be mitigated, if classroom sessions are part of the program and are well used.
Engl	Theoretically, I should think it would isolate students from each other.
Engl	It is my speculation that the individual student working independently in a cubbyhole is not likely to interact.
Biol	My reaction is that interaction might be hampered as students work on their own.
Biol	I would tend to agree, but have no basis for agreement.
	15. I would recommend a TICCIT course to students.
Engl	I would recommend to students with certain kinds of remedial needs.
Engl	Many students are blank in language preparation and any mode would help them.
Engl	If a student wanted a review of the principles of grammar, I would recommend TICCIT. I feel uneasy about the uses being made of it. It probably does not address itself to the writing problems that students have. It's non-transferable.
Biol	I would recommend to the highly motivated, self-disciplined student.
Biol	It would depend on the student, the course, and the circumstances.
Biol	I would recommend it for some students. Older women lack self-confidence (housewives) while older men do better.
Chem	I would recommend it for some students. Some would have a problem with self-paced courses and need a push.
Soc	I would recommend trying it out for information transaction and control. This is an improvement over uncontrolled courses.

Engl English
Biol - Biology
Soc - Sociology
Psy - Psychology
Acctg - Accounting
Chem - Chemistry

Subject	Statements and Qualifications
	16. I have a positive attitude toward TICCIT's impact on the campus.
Engl	I have a positive attitude provided the necessary improvements are made in the courseware.
Biol	The strain on our resources from having to put so much money into it gives me a negative attitude. However, I'm hopeful that in providing for students, it has a positive impact.
Biol	I have a positive attitude to a limited degree.
Biol	I have a positive attitude, but would not like to see it forced into areas where it is not the most appropriate instructional mode.
Soc.	It is an overall useful mechanism.
Acctg	I encourage the use of TICCIT as a developmental support when students are weak in math.
	17. TICCIT is a potential threat to jobs of faculty members.
Engl	I have heard official comments on both sides of this matter, but personally I do not feel threatened.
Engl	Television has potential as a supportive tool, but I don't feel threatened.
Engl	It could be a threat.
Engl	I think it's the opposite of a threat.
Biol	It has employed many people to develop courseware.
Biol	Faculty members who are doing their job will not be replaced by a machine.
	18. I would prefer to teach on TICCIT.
Engl	I am interested in trying it.
Biol	I would like to have segments of courses on TICCIT, but only for the highly motivated students.
Biol	I would be receptive to trying it.

Subject	Statements and Qualifications
	18 Cont.
[illegible]l	I would want to see problem solving materials in the sciences on TICCIT, particularly genetic problems. I would not want memory or regurgitation type material on TICCIT.
Biol	Adjunctively
[illegible]l	Adjunctively
[illegible]l	As it presently stands, I would like to add simulation games.
Chem	I would like to try it adjunctively.
[illegible]	I would like to try it out.
[illegible]	I would like to try course segments on TICCIT - use it adjunctively.
Acctg	I would like to incorporate its use as an adjunctive tool.
	19. There are greater demands on the instructor's time in a TICCIT class than in other classes.
[illegible]	If the instructor gives the necessary (presence) assistance with TICCIT, it could be quite demanding.
Biol	The demands are probably about the same.
[illegible]l	Unless an instructor is involved in programming, there is less demand on his/her time. The contact hours are the same and there is very little preparation time involved.
Biol	There are too many variables for a clear-cut answer.
[illegible]ctg	An instructor might make better use of time with TICCIT than with other teaching aids that are currently available.
	20. The TICCIT system lends itself for use in subject area.
Engl	It's possibly useful in English composition in the adjunctive mode.
Engl	It does for students with scanty background.
[illegible]l	It lends itself in a limited way.

Engl English
Biol - Biology
Soc - Sociology
Psy - Psychology

Acctg - Accounting
Chem - Chemistry

Subject	Statements and Qualifications
	20 Cont.
Biol	Certain aspects of the system might be useful.
Biol	Adjunctively, only.
Biol	Adjunctively.
Biol	It lends itself for use in a limited way for biology students, i.e., objective topics, testing.
Biol	Adjunctively.
Biol	It does not lend itself as it is presently programmed.
Chem	It lends itself for use in chemistry problem solving and practice in word problems.
Soc	It could be adapted as a complementary system. I do not want to lose the human side of teaching.
Acctg	It lends itself for use in the quantitative areas.
	21. As a decision maker, what would you do with TICCIT?
Engl	Get rid of TICCIT. Let's not have it at all.
Engl	Expand TICCIT if the courseware is adequately developed. Limit its use to mechanical type learning situations. Use it for testing, practice and adjunctively only.
Engl	Use TICCIT adjunctively only.
Engl	Use TICCIT adjunctively, as another resource like the library.
Engl	Destroy TICCIT.
Engl	Use TICCIT for practice only.
Engl	I could not make a decision based on what I know about TICCIT. (first year at NVCC)
Engl	Expand the system.

h.

Subject	Statements and Qualifications
	21 Cont.
Engl	TICCIT could have useful application in other areas. I would need to know more about other divisions and areas to respond adequately to this statement as an administrator.
Biol	I would expand TICCIT to include practice, testing, and make it available ot other fields. I favor adjunctive use.
Biol	I do not have enough information to make an informed decision.
Biol	I definitely would expand TICCIT to other subject fields, especially since we have the machinery. It should be used for testing, practice and adjunctively.
Biol	I would expand TICCIT and limit its use to the adjunctive mode and testing.
Biol	I would expand TICCIT, but limit its use to testing, practice and the adjunctive mode. As an administrator, I would investigate the cost versus the benefits before going further with the program.
Biol	I would like to see TICCIT expanded to most other subject fields. I'd like to see it used for testing, practice and adjunctively.
Biol	Expand TICCIT, but restrict its use to the adjunctive mode and for testing.
Biol	Scrap the present programming of TICCIT.
Chem	Keep TICCIT for adjunctive use only.
Chem	In order of priority: use it adjunctively for practice, expand the system and use it for testing.
Soc	Expand TICCIT to other subject areas, but limit its use to those subjects that lend themselves to this type of instruction. Testing is one of TICCIT's better uses and I would machine test exclusively. I would use it adjunctively (never mainline) and for practice exercises in certain systems.
Hist	I would expand to other subject areas. TICCIT has potential for sophisticated practice. It would be excellent for this, but a lot of work to program.
Psy	Expand TICCIT to other subject areas besides math and english. It has potential in certain skill learning that can be taken out of the classroom, thus freeing the classroom for other kinds of learning experience.

Subject	Statements and Qualifications
	21 Cont.
Acctg	I would expand TICCIT after the kinks are worked out of the current offerings. I recommend that it be used adjunctively only, as every student should have the benefit of an instructor's aid in any course. TICCIT is fine, but only as a supplement.
	FUTHER COMMENTS ABOUT TICCIT
Engl	From an English perspective: The computer falsifies language presenting it as quantifiable and sequential. Language is too subtle for machine presentatio Philosophical perspective: Interaction with the screen and keyboard may be, ultimately, detrimental to the student, in spite of positive skill upgrading. I have doubts about its use, even for sequential, quantifiable and drill oriented courses. Management perspective: The English faculty particularly, but others also, are trying to make TICCIT justify itself. Some are involved in making units that can be computerized - things that are easily teachable without the machine. It's a waste of time and money to spend time and money justifying TICCIT, when it so clearly did not do the job it promised to do. There is no guarantee that we'll ever find parts of the English language, or composition that the machine can teach any better than a human. We are not allowed to give constructive criticism; we're only exhorted to find things to put on TICCIT. The date for the decision to keep or discard TICCIT keeps getting pushed further away. The vote should have been taken 2 years ago after 10 weeks of experience in reviewing and revising. There is absolutely no certainty that knowledge of English grammar gained late, necessarily transfers to ability to write. Skills learned on the machine are soon lost. A teacher can individualize instruction better than a machine, because of flexibility and ability to explain exceptions. TICCIT is not for the imaginative, creative, bright student.
Engl	I spend 40% of my time developing courseware and I feel positively that TICCIT has much potential. We should keep it on campus and try to improve it.
Engl	My own experience with TICCIT shows how very easy it is to become involved in manipulating the machine and conniving to get through by mechanical means rather than by intellectual stimulation. The machine becomes the focus of study, rather than the subject. This was surprising, as I expected an academic relationship with the machine rather than a manipulative one. I fear that so much has been spent on the system that even if it is not academically sound it won't be discarded. It may result in more harm then good, just because so much has been spent. It should be kept if it brings

j.

Subject	Statements and Qualifications
	the desired educational experience. It is harmful when we are too dependent on machines and less on personal relationships. It's possible that general addiction to machines may engender increasing distrust of people. The machine is hard on the eyes. It increases the fragmenting of one's world and is not helpful in increasing one's attention span. Of the students for whom I prescribed TICCIT assignments, 2 didn't do the assignment and 2 were completely frustrated by the machine "going down."
Engl	I suggest an open meeting where we can all express our opinions about the future of TICCIT. I am philosophically opposed to an over "Technologized" environment. It's fine to have TICCIT available, but leave room for human interaction. TICCIT ignores the end; the means becomes the end with the mechanical process becomes more important. Is the return great enough for all the human investment in energy? TICCIT advertises that everything is accountable, but it is not. The frustration of getting information into the system seems to defeat a sense of community in learning. TICCIT is sequential, one can't go back, without spending a lot of time on manipulation and there is the frustration of trying to make connections between segments.
Engl	I am surprised not to hear more reference to TICCIT by students. I get the strong impression of an expensive white elephant, that cost so much money and time that it cannot be done away with - like government bureaucracy. I'm concerned about non-transference of skills to actual writing.
Engl	I would like to see the present evaluation results, as well as the cost of operating TICCIT vs. the cost of live classroom instruction, before making any definitive statement about the system. I do not believe it makes as great an impact on students as other modes of instruction.
Engl	If TICCIT were an inexpensive tool, it would be useful. Some well-written, elementary courses could be taught on TICCIT. Even used as a support tool, is it worth what it costs in terms of student outcomes. I have heard negative student reactions to TICCIT. They felt cheated by having a machine rather than a teacher. Students are getting away from the printed page more and more and TICCIT hastens this trend. The systems approach is too segmented, isolated and unrelated.

NON -TICCIT FACULTY

Subject	Statements and Qualifications
Engl	It is a problem to know which students can benefit from TICCIT and which teachers can use it most effectively. Contrary to sound educational practices and academic freedom, teachers and students are assigned to TICCIT. Those who can use it most effectively should. Many students have not benefitted very much from the experience.I'm not unalterably oppossed to TICCIT, but I am unalterably opposed to it being mandated.
Biol	I believe in constant student/teacher interaction, therefore, TICCIT should not be mainline for any class. Are students benefitting in the long run? If not, and the cost is prohibitive, I would not like to see TICCIT expand. I feel, generally, that there is no one method to fit all student needs and variety is necessary. Students learn from their peers, as well as from the teacher.
Biol	I think it is a wise decision that TICCIT must prove itself or be eliminated. In terms of available resources, we need to know whether it is worth keeping or dropping. However, it is here and it will be hard to get rid of it. I hardly expect to see it hauled off en masse. Hopefully, it will be proven positive. If we're going to keep it, there should be concerted effort to educate those not using it, as to how to use it for their specific courses - courseware writing, etc. We only hear about it once a year, peripherally. VPI-SU ought to offer courses on writing for TICCIT.
Biol	I am positive about TICCIT and consider Alexandria fortunate to have the opportunity to test, use and evaluate it. Evaluation is good.
Biol	Some things in general biology would not be suitable for this mode of instruction, but it has potential and possibilities in the scientific area. I am presently trying to work out a testing program (individualized) in genetics and general biology. I will try out testing on one unit next year. It will also be useful for problem solving in genetics.
Biol	I have a positive, but guarded attitude about TICCIT. It cannot replace the classroom situation. It has a certain amount of flexibility (like ELI) for those people for whom it provides the only entry into an educational setting. It is also good for specific learning situations (not value judgement situations), but for repetitive, practice and very exact kinds of things.
Biol	TICCIT is good for review of basic concepts in biology, especially when students miss a class. Some testing can be done on it, but more creative testing must be done in the classroom. I would like to take the TICCIT Math class, but have not had time.

Subject	Statements and Qualifications
Biol	The human element provides a better quality of instruction which brings excitement and appreciation for the subject matter into the classroom. TICCIT cannot do this and because it cannot transmit excitement, it has a built in deficit which cannot be overcome. Others can use TICCIT, but I would only like to see it used adjunctively. Enthusiasm, style, enrichment are not available from the machine.
Biol	Computer capability should be used for simulations and other experiments that cannot be done in other ways.
Chem	I thought the original grant was great, but I'm now considering the dehumanization of teaching. Student/student and student/teacher interaction is too important to let the machine get in the way of person to person interaction.
Chem	I used TICCIT for one segment of a chemistry course and the students reported: 1. it helped them learn; 2. they remembered the elements and symbols better; 3. they could spell them correctly. TICCIT is helpful in reminding one of exceptions from generalizations. I would definitely like to see TICCIT remain on campus and expand. It lends itself to test type questions for practice.
Soc	TICCIT is good for systematizing information flow, but I would like to keep the human element in the forefront. The interpersonal relations between the student and teacher are highly essential to the learning process. The teacher can create vision and excitement about learning that the machine cannot. Man and the machine should be complementary as man is sometimes sloppy with information. The role of teacher should be safeguarded, but is lost when looking over the shoulder of a student looking at television. The classroom has inspiration and excitement. I like the idea of educational activism, pioneering with TICCIT. The experimental spirit is good. The heart of it all is to do better teaching.
Hist	I am uncertain as to whether TICCIT would be useful in a Western Civilization course, but I'd like to "play with it a bit" to see if it is useful. It might be beneficial for structured reading and, perhaps teaching document analysis. When TICCIT is totally "ours", we can see what it will do.
Psy	I'm anxious to see empirical studies. What successes can be attributed to TICCIT? What kind of students succeed on TICCIT? How best can it be used as an instructional mode? I would like to see the broad overall study. I agree with the broad conceptual design of the program.

m.

Subject	Statements and Qualifications
Acctg	There is a danger of impersonality if TICCIT is used more than adjunctively. I fully support TICCIT, if it is properly used. I am a firm believer. I encourage students to use the math program for brushing up or refreshing their skills. TICCIT is a very valuable tool for this purpose.

n.

TICCIT OPINIONNAIRE

DIVISION _____ SUBJECT _____ COURSE _____

POSITION _____ WORKLOAD FT ____ PT ____ AGE: 20-29 _____ 30-39 _____

40-49 _____ 50- _____ NUMBER OF YEARS TEACHING EXPERIENCE _____

AT NVCC _____ IN COMMUNITY COLLEGES _____ OTHER LEVELS (SPECIFY) _____

DID YOU HAVE CAI EXPERIENCE OTHER THAN TICCIT? _____ HOW LONG _____

	STRONGLY AGREE	AGREE	NOT SURE	DISAGREE	STRONGLY DISAGREE
1. I felt receptive to the TICCIT project before it got underway.	(5)	(4)	(3)	(2)	(1)
2. TICCIT is one of the most innovative developments in education today.	(5)	(4)	(3)	(2)	(1)
3. The TICCIT program allows for the integration and constant review of subject matter skills.	(5)	(4)	(3)	(2)	(1)
4. Student-instructor interactions are improved due to TICCIT.	(5)	(4)	(3)	(2)	(1)
5. TICCIT is a viable alternative for achieving the instructional goals of a course.	(5)	(4)	(3)	(2)	(1)
6. TICCIT is less convenient for students than a combination of classes and homework.	(5)	(4)	(3)	(2)	(1)
7. Students receive more individual attention from instructors, in the TICCIT program.	(5)	(4)	(3)	(2)	(1)
8. In TICCIT classes students assume too much responsibility for their own progress in order to complete a course.	(5)	(4)	(3)	(2)	(1)
9. Working on the TICCIT system improves students' learning strategies and study habits in other courses.	(5)	(4)	(3)	(2)	(1)
10. TICCIT promotes self-confidence and a sense of accomplishment.	(5)	(4)	(3)	(2)	(1)
11. TICCIT has a positive impact on student achievement.	(5)	(4)	(3)	(2)	(1)
12. Course completion rates of TICCIT compare favorable with other courses.	(5)	(4)	(3)	(2)	(1)
13. TICCIT has a negative effect on student attitude toward subject matter.	(5)	(4)	(3)	(2)	(1)
14. Student-to-student interactions are hampered by TICCIT.	(5)	(4)	(3)	(2)	(1)
15. I would recommend a TICCIT course to students.	(5)	(4)	(3)	(2)	(1)

16.	TICCIT has had a positive impact on the campus.	(5)	(4)	(3)	(2)	(1)
17.	TICCIT is a potential threat to jobs of faculty members.	(5)	(4)	(3)	(2)	(1)
18.	I would like to teach on TICCIT.	(5)	(4)	(3)	(2)	(1)
19.	There are greater demands on the instructor's time in a TICCIT class than in other classes.	(5)	(4)	(3)	(2)	(1)
20.	The TICCIT system lends itself for use in my subject area.	(5)	(4)	(3)	(2)	(1)

21. As a decision maker, what would you do with TICCIT?

    a. Expand its use by _____

    b. Limit use to _____

    c. Use for testing _____

    d. Use for practice only _____

    e. Use adjunctively _____

ADDITIONAL COMMENTS

PLEASE RETURN TO: TICCIT PROJECT OFFICE

DEPARTMENT	TICCIT OPINIONAIRE COMMENTS
Business	- Limit use to subject areas which lend themselves to this method of instruction. I think it has use for testing. I have heard favorable comments from students who have taken TICCIT courses. - Expand its use by offering more courses. - Limit use to self-motivated, gifted students. - Expand its use by including other courses such as accounting and business math. Limit its use to courses with enrollments high enough to warrent the high cost of development. Limit use for practice only for courses such as computer programing. Use adjunctively for computer programing courses. - Expand its use by using all phases of grammar in English language courses.
Math & Natural Sciences	-Expand its use by developing other courses such as geometry, trigonometry, and pre-algebra. - The instructor has to be prepared to handle the entire course at one time because students are every where at once. I believe students need a study guide to help them with rules, examples, and other practice problems. When a student has difficulty, they need other support which should be a book-- their usual learning guide. - In several questions my real response is that the statement is true for some students or situations and false for others. I can't generalize to all students of situations.
Humanities	- Expand its use by incorporating a unit on deduction, syllogistic logic, and more complex symbolic logic. Use adjunctively in a logic class-- with lecture and newspaper work. TICCIT really could be helpful in the logic courses if we could get enough on line. Most of the course could be taught on it. - Expand its use by making English 110 a prerequisite for English 111 for those students who have been diagnosed as writing adequately, but with discernable deficiencies in grammar or usage yet are above the VSL II level. Use adjunctively in English courses as needed. I feel that most of the questions do not validly apply to me since I do not view TICCIT from an instructor's viewpoint, but rather from that of an author writing materials for TICCIT. - Limit use to grammar and mechanics. I did not find it effective for the teaching of writing. TICCIT is a great aid; the many examples and opportunities for practice make it a tremendous tool. As enthusiastic as I am about TICCIT, there is just no substitute for the competent and caring teacher in a course as difficult and rewarding as English Composition. He/She presents stimulating writing assignments and evaluates tham carefully, working closely with each student as his writing develops in insight, fluency, precision, and grace. And so forth!

DEPARTMENT	TICCIT OPINIONAIRE COMMENTS
Social Science	- Limit use to math, sciences, and languages. - Expand its use by covering the whole learning experience No limit to its use. Can be usdd for testing. Excellent potential. -Limit use to math, English and other programables. - Expand its use by adding more courses in science, mathmatics, and English. Limit use to students registered for courses and to college staff. Use for TICCIT tests only. Use adjunctively when possible. At this time it has not been possible to find a way of using TICCIT for social science instruction. This is my reason for marking "disagree" to question #20. Find us a way and we will use it.
Continuing Education	- Expand its use by involving more curriculum. Try to develop some type of course information package or program that a student could utilize through TICCIT.
Counseling	- Expand its use with additional courses. Use for placement testing. - Expand its use by including career information and specific units from other subjects. Limit use to highly motivated, self-disciplined students. Use for testing if appropriate to course. Would not be used for practice only by students. Use adjunctively instead of exclusively, if possible. TICCIT can work. An effort should be made to orient students to computer-assisted instruction. Students should be required to discuss time scheduling and self-discipline before starting a TICCIT course. Too many students are currently having negative experiences on TICCIT because they have never been exposed to a learning experience where the approach is so unstructured. I would like to know why successful students did well so that I can help the procrastinating and frustrated student do better. - My response is based on what students, mostly internationals, tell me. I think more attention should be directed towards evaluating its effectiveness with students from other countries.
Visual Arts Engineering	- Expand its use if possible with our limited funds. I think it is important to continue to look for funding sourses to support TICCIT. - Although I have never had occasion to use TICCIT, the program seems worthwhile. - Eliminate it. Sell the hardware and hire some humans. I don't wish to sound reactionary, but ever since I saw the first TICCIT station 3 years ago I have been deeply saddened by its existence. The college seems far too "hardware oriented to me. - If TICCIT is cost effective, then I support it.

DEPARTMENT	TICCIT OPINIONAIRE COMMENTS
LRC and TICCIT Project	- Expand its use by creating more courses and adjunctive use. Use for testing on all levels - Expand its use by introducing new courses and special modules. - Expand its use by adding more subject matter. - Expand its use by adding other subjects. Limit use to qualified instructors to use as teaching instrument. Use for testing. Use for practice only. Use adjunctively--maybe - Expand its use by adding other courses or parts of courses. Use for testing. Use adjunctively. The amount of individual attention from the teacher is greater than that received in a lecture course. Get more departments interested in using TICCIT. - Expand its use by adding new courses or appropriate modules from other courses. - Expand its use by adding more modules. - Use adjunctively for remedial or supplemental work.

APPENDIX G

Memoranada submitted by
Ms B. Wyles and Mr. R. Davis
Re: Training of TICCIT Faculty

NORTHERN VIRGINIA COMMUNITY COLLEGE

NATURAL SCIENCES AND MATHEMATICS
Alexandria Campus

May 9, 1977

MEMORANDUM

TO: Ms. Monica F. Sasscer

FROM: Mr. Ron Davis

SUBJECT: Training of Math TICCIT Teachers

It is my firm belief that teaching with TICCIT requires very careful training. A deep knowledge of the mechanical operation, the course material, the reasons for a particular approach, and the manner in which various aspects of the course material build upon one another is essential to being successful with TICCIT. Further, the faculty member needs a positive attitude toward TICCIT and a willingness to utilize this alternative approach to instruction.

Full and part-time faculty members are asked to participate in teaching TICCIT based upon their attitude and willingness. They then are given a basic introduction to the fundamentals of the mechanical operation of the TICCIT keyboard. We then encourage them to work on the system as a student would. This gives them a view of how their students might perceive it. In the meantime, the future TICCIT teacher is given hands-on experience with the use of the proctor functions. A further stage in the training is that of observing other teachers who are using TICCIT.

After giving an introduction to several staff members, the teacher then begins working with a class. At first this is done in a team situation with another experienced teacher and then in a week or two as the only teacher for the class. On-going training continues with the teacher having informal discussions with proctors and other teachers about the features of TICCIT.

We have found this system to work quite well. It ensures continuity of instruction and a large degree of uniformity in approach to the system.

RD:js

Northern Virginia Community College

Alexandria Campus

MEMORANDUM

To: Dr. Jean Netherton, Provost

From: Barbara Wyles, Assistant Division Chairman, English

Date: May 9, 1977

Subject: Training/Preparation of English Faculty in TICCIT

Following is a report on the Training/Preparation of the English faculty in TICCIT which, subject to your approval, can be forwarded to Ms. Monica Sasscer for inclusion in the final report on TICCIT.

The initial orientation of the English faculty to the TICCIT system came through several general faculty orientation sessions, set up for that purpose, during the 1975-76 academic year. In addition, a cassette-tape orientation for faculty, accompanied by a copy in print, has been placed in the Learning Lab for individual faculty use.

In the fall quarter of 1976, the English faculty were asked to complete a questionnaire (see Attachment A), indicating their familiarity with and use of TICCIT. Following these responses, those faculty members not yet familiar with the operation of the TICCIT keyboard or with the actual course material of TICCIT, were paired with English faculty members already familiar with both the mechanics and the content of TICCIT. In this way, those experienced in TICCIT served as guides to help orient those faculty not yet familiar with TICCIT. All faculty were then asked to address particular tasks in familiarizing themselves with TICCIT. (See Attachment B).

To date, all full-time English faculty have completed this checklist of functions, thereby being able to perform these skills.

More important than any of these rather structured orientation activities, is of course the detailed and intensive knowledge of TICCIT that comes only through teaching with it. To date seven of the fifteen full-time English faculty have

taught with the use of TICCIT; three of the Developmental faculty have taught courses using TICCIT. In addition, seven of the English faculty have been involved in the on-going revision of the English TICCIT course material, a process which demands a most comprehensive knowledge of TICCIT.

cc: Dr. Elaine Niner
Ms. Monica Sasscer

TICCIT USE

Name_____ Please check all statements that are applicable.

____1. I have completed the TICCIT orientation.

____2. I have taught with the use of TICCIT. List course(s)

____3. I have logged on and looked at most of the material, working some of the practice problems.

____4. I have logged on and looked at some of the material, but have <u>not</u> worked any of the practice problems.

____5. I have referred many students to TICCIT for adjunctive use, but <u>am not</u> familiar with TICCIT material myself.

____6. I have referred several students to TICCIT for adjunctive use, but <u>am not</u> familiar with TICCIT material myself.

____7. I have <u>not referred</u> any students to TICCIT and <u>am not</u> familiar with the TICCIT material myself.

____8. I have not referred any students to TICCIT but <u>am familiar</u> with TICCIT material myself.

____9. I <u>have referred</u> students to TICCIT and <u>am familiar</u> with TICCIT myself.

General comments and impressions based on your use of TICCIT: (Include major strength and the major weakness.)

TICCIT CHECKLIST

_____1. Log-on

_____2. Log-off

_____3. Access Coursed Map

_____4. Access Unit Map

_____5. Access Lesson Map

_____6. Complete all segments of one particular lesson in one of the following Units: 13, 12, 9, 8,5,4, 3. (This includes work in all components of these segments, ie., Objective, Rule, Rule Hard, Easy, Help; Practice, Practice Hard, Easy, Help, Example, Example Hard, Easy, Help, Advice)

_____7. Complete a Lesson Test

Appendix H

Revision Status of
TICCIT Math and English
Courseware

June 15, 1977

ATTACHMENT I

MEMORANDUM DATE: June 13, 1977

TO: Monica Flynn Sasscer, Director of TICCIT Project

FROM: Margaret Liu

SUBJECT: Status of Revisions, TICCIT English

This constitutes a brief summary of the English authoring effort this academic year for TICCIT English 110/199. Since the end of the formal training program in TICCIT authoring, which took place through the end of November 1976, a comprehensive plan for thorough revision of the courseware was proposed and accepted (see memorandum of January 25, 1977). Based on this plan, and with the part-time help of Kathy Bassford, Bill Harrison, and Barbara Marx, the following segments of TICCIT English have been revised:

UNIT 7 Parts of Speech: Form and Function

LESSON 1 Conjunctions; Interjections

SEGMENT 1 Interjections
SEGMENT 2 Conjunctions

LESSON 2 Prepositions

SEGMENT 1 The Prepositional Phrase and Its Uses
SEGMENT 2 Objects of Prepositions
SEGMENT 3 Prepositional Phrases
SEGMENT 4 Prepositions

LESSON 3 Adjectives and Adverbs

SEGMENT 1 What Modifiers Modify
SEGMENT 2 Adverbs
SEGMENT 3 Can Nouns and Pronouns Be Modifiers?
SEGMENT 4 Adjectives

LESSON 4 Nouns and Pronouns

SEGMENT 1 Nouns, Pronouns, and Case.
SEGMENT 2 Pronoun Case
SEGMENT 3 Noun Case
SEGMENT 4 Pronouns
SEGMENT 5 Nouns

LESSON 5 Verbs

SEGMENT 1 Main and Auxiliary Verbs
SEGMENT 2 Forms of the Verb Be
SEGMENT 3 Action Verbs and State-of-Being Verbs

In addition, both Kathy Bassford and Bill Harrison have been working on a segment on the subject of capitalization; the generalities for this segment are near completion, and the instances are in progress.

The generalities for the 18 segments which comprise Unit 7, listed on p. 1, have been completely rewritten; some of the segments have instances on-line which need further "debugging" or are in the process of being packaged, while other segments are "debugged." (Approximately 98% of the present instances were replaced.)

Part of the objective of the authoring effort in English was to have at least 3 faculty members review the revised material. Because one of the part-time authors has been writing grant proposals to seek outside funding for courseware development, much of the revisions has been reviewed by only two faculty members thus far.

Revisions will be continued throughout the first five-week summer session, and it is expected that at least the 18 segments listed on page one will appear on-line in the Fall 1977 quarter; these materials will replace present Unit 13.

Margaret Liu

ATTACHMENT II

June 15, 1977

TICCIT Project Report

To: Monica Sasscer
From: Ed. Huff and Dunstan Hayden, TICCIT Project authors

As of June 15, in addition to completing the training course, we have rewritten the following segments:

Lesson 23.1 Integers

1. Arithmetic Expressions
2. Divisibility of integers
3. Multiplication of integers
4. Subtraction of integers
5. Addition of integers
6. Absolute value
7. Integers

Lesson 20.4 The Real Number System

1. The real number system
2. Distributive laws
3. Associative laws
4. Commutative laws
5. Division
6. Subtraction
7. Inverse laws
8. Identity laws
9. Addition and multiplication
10. The real number line

Lesson 20.3 Linear Equations In One Variable, Part 1

1. Applications
2. Solutions for $ax + b = c$
3. Solutions for $ax = b$
4. Solutions for $x + b = c$
5. Equations and solutions

Lesson 20.2 Linear Equations in One Variable, Part 2

1. Applications
2. Ratio equations in one unknown
3. Classification of equations
4. Using the distributive law to solve equations
5. More linear equations

Lesson 20.1 Applications

1. General word problems
2. Writing equations
3. Writing expressions
4. Word problems which can be solved with the equation $A \cdot B = C$

Lesson 22.2 Rational Numbers

1. Quotient expressions
2. Order of operations
3. Subtraction
4. Addition
5. Division
6. Multiplication
7. Simplest form
8. Fundamental Principle of Fractions
9. Rational Numbers

During the coming summer we will try to correct typos, incorrect answer states and other minor problems. We do not plan to re-write generalities or make any other major revisions. In this way we hope we can have most of the courseware for Unit 17 in usable shape for the Fall Quarter.

Almost all of the segments listed above have been completely rewritten. The most important changes include the following:

A. The Objectives were rewritten in order to show the application of the material to real world problems.

B. The Rules were recast in order to present a clear and complete algorithm. (E.g., in the old Ma.20.3.2 the Rule said: "Multiply both sides by an appropriate number." In the newer version the student is told explicitly to multiply by the reciprocal.)

C. The complexity of the instances was reduced where appropriate (e.g., in the segments on arithmetic simplification).

D. The Helps were often expanded and made more explicit.

E. The extended treatment of artificial word problems has been eliminated. The new word problems are selected to reflect real world concerns: taxes, salaries, British and metric measurements, consumer finance, and industrial applications. So far as possible, we have made the unknown quantity in these problems to be something that is usually unknown in the real world.

The major thrust of the TICCIT Revision Team has been to create material that will teach students to set up equations for word problems and to solve them. Although this is a difficult skill to teach, it is basic to the student's success in future courses in almost any field, as well as in his/her financial and consumer affairs.

In addition, the team, with a great deal of help from Barbara Marx, has written grant proposals to various agencies and will continue to pursue grant possibilities.

Appendix I

Student Attitude
Survey of Engl 110
--with response means
shown

NORTHERN VIRGINIA COMMUNITY COLLEGE

Student Survey
TICCIT Courses - English 110

NAME (Optional) _____ Quarter _____

Section: _____

Section I Items 1-36

Directions: For the following statements, circle the number that represents the response closest to your opinion.

SA (5) = Strongly Agree. You strongly agree with the statement or feel that it is true almost all of the time, as it applies to this course or TICCIT.

A (4) = Agree. You agree more than you disagree with the statement or feel that it is true most of the time, as it applies to this course or TICCIT.

NS (3) = Not Sure. You simply are not sure despite opinions on the statement.

D (2) = Disagree. You disagree more than you agree with the statement or feel that it is false most of the time as it applies to this course or TICCIT.

SD (1) = Strongly Disagree. You strongly disagree with the statement or feel that it is false in almost all cases as it applies to this course or TICCIT.

		SA	A	NS	D	SD	RESPONSE MEAN
1.	In this course I felt free to ask questions	5	4	3	2	1	4.33
2.	Using TICCIT allowed me to set a pace that was right for my ability	5	4	3	2	1	4.58
3.	I received a lot of individual attention from the instructor in this course	5	4	3	2	1	3.53
4.	The instructor seemed genuinely concerned with my progress . .	5	4	3	2	1	3.86
5.	Through TICCIT I became actively involved in my own learning .	5	4	3	2	1	4.26
6.	This mode of instruction met my own particular needs	5	4	3	2	1	3.95
7.	I didn't understand how to use "MAP" to guide my learning in this course	5	4	3	2	1	2.17
8.	TICCIT's comments on my work ("ADVICE") helped me in learning rules and concepts in grammar	5	4	3	2	1	3.65
9.	Doing practice questions ("PRACTICE") helped me in learning rules and concepts in grammar	5	4	3	2	1	4.26
10.	TICCIT "HELP" provided clear explanations when the material was difficult to understand	5	4	3	2	1	4.11
11.	The rule statements ("RULE") on TICCIT made concepts in grammar easy to learn	5	4	3	2	1	4.08
12.	Taking tests in this course let me know whether or not I really understood the material	5	4	3	2	1	3.78

		SA	A	NS	D	SD	
13.	I feel better qualified to analyze English sentences	5	4	3	2	1	3.84
14.	In this course I felt responsible for my own learning.	5	4	3	2	1	4.63
15.	Breakdowns of the computer system disrupted my learning. . . .	5	4	3	2	1	3.31
16.	I learned a lot about grammar in this course	5	4	3	2	1	4.08
17.	I feel the knowledge of grammatical terms will be useful to me in other English courses	5	4	3	2	1	4.31
18.	Other students in this section seemed to like the course . . .	5	4	3	2	1	3.28
19.	In this course I felt challenged to do my best work.	5	4	3	2	1	3.84
20.	I was satisfied with my personal progress in this course . . .	5	4	3	2	1	3.93
21.	The method of instruction for this course was too impersonal for me	5	4	3	2	1	2.77
22.	I feel that what I've learned in this course will be useful in other courses	5	4	3	2	1	4.15
23.	I would recommend this course with TICCIT to my friends	5	4	3	2	1	3.93
24.	I would take another course that uses TICCIT	5	4	3	2	1	3.91
25.	I think I've become a better reader in this course	5	4	3	2	1	3.13
26.	The instructions for doing practice items and tests were difficult to read	5	4	3	2	1	2.06
27.	I found the unsolicited ADVICE messages distracting	5	4	3	2	1	2.68
28.	I do not like the responsibility for my progress that TICCIT places on me	5	4	3	2	1	1.97
29.	I think that what I've learned will make me a better writer. .	5	4	3	2	1	3.78
30.	It bothered me not to have much contact with other students. .	5	4	3	2	1	2.06
31.	I used "HELP" in learning the rules and preparing for the tests.	5	4	3	2	1	3.68
32.	I used "ADVICE" in learning the rules and preparing for the tests.	5	4	3	2	1	3.52
33.	I reviewed each test that I failed to prepare for taking it again	5	4	3	2	1	3.93
34.	I reviewed previous lessons in learning the rules in the lessons I worked on.	5	4	3	2	1	3.04
35.	I would have preferred another type of instruction in grammar—such as classroom lecture and discussion or a workbook	5	4	3	2	1	2.74
36.	My writing will be better because of what I've learned about grammar	5	4	3	2	1	3.77

SECTION II Items 37-44

Directions: For each question circle the response number closest to your opinion of this course or TICCIT.

37. Time passed quickly while I was in class. Response Mean: 4.24

5 Almost Always 4 Frequently 3 Not Sure 2 Occasionally 1 Almost Never

38. The mechanics of using the terminal distracted me from learning. : 2.12

5 Almost Always 4 Frequently 3 Not Sure 2 Occasionally 1 Almost Never

39. I just tried to finish the lessons rather than learn the material. : 2.14

5 Almost Always 4 Frequently 3 Not Sure 2 Occasionally 1 Almost Never

40. I wanted a textbook for this course to use as a reference at home. : 3.28

5 Almost Always 4 Frequently 3 Not Sure 2 Occasionally 1 Almost Never

41. I wanted information that would tell me where I stood in comparison to other students. : 2.214

5 Almost Always 4 Frequently 3 Not Sure 2 Occasionally 1 Almost Never

42. For me, the pace at which I had to cover the material in order to finish the course was: : 2.73

5 Very Slow 4 Somewhat Slow 3 About Right 2 Somewhat Fast 1 Very Fast

43. For my preparation and ability, most of the work in this course was: : 3.00

5 Very Difficult 4 Somewhat Difficult 3 About Right 2 Somewhat Easy 1 Very Easy

44. The work load for this course, in relation to other courses of equal credit, was: : 3.40

5 Much Lighter 4 Lighter 3 About the Same 2 Heavier 1 Much Heavier

SECTION III Items 45-53

Directions: Please check the response which reflects your opinions for questions 45 - 49. Then circle the number that best represents your activities for this course. (question 50 a-f) and complete the blanks for the last question.

45. Why did you take English 110? (You may check more than one)

[35] I wanted a grammar course.

[8] I was looking for an elective.

[3] I could not get the English course I had planned to take.

[8] A counselor/adviser recommended the course.

46. When you finish this course, do you plan to take any more courses in English?

Yes [30] No [4]

47. At the beginning of this term, did you plan to take more English courses than this one?

Yes [25] No [15]

48. Has your experience in this course:

[23] encouraged you to take further courses in English?

[2] discouraged you about taking further courses in English?

[17] had no effect on your plans for further courses in English?

49. Please indicate other English courses you have taken.

[25] High School English

[6] ENGL 01 - Verbal Studies

[6] ENGL 05 - English as a second language

[18] ENGL 111 or equivalent

[8] ENGL 112 or equivalent

[7] ENGL 113 or equivalent

[4] Other (please explain)

50. During this QUARTER about how often did you:

MEAN		Quite Often	Occasionally	Almost Never
1.48	a) meet with an instructor or proctor outside of class, to discuss your classwork or anything else related to this course?	3	2	1
1.24	b) meet with an instructor for this course to discuss personal or academic matters NOT specifically related to the course?	3	2	1
1.43	c) discuss questions related to the course with fellow students?	3	2	1
1.36	d) seek the help of a tutor for this course?	3	2	1
1.14	e) use library resources or the learning skills center in connection with your work in this course?	3	2	1
2.05	f) want to use the TICCIT system when it wasn't available?	3	2	1

51. Approximately how many hours per week did you spend working on the TICCIT system for this course? MEAN: 5.91 (10 no responses)

52. The most helpful unit in this course was? _____

53. The least helpful unit in this course was? _____

COMMENTS (Please include comments about your feeling and reactions toward this TICCIT course; specific observations on the kinds of activities you liked or disliked would be very helpful -- feel free to use a separate sheet of paper):

Thank you!

Appendix J

Samples of Instruments
used for Faculty Activity
Study

attachment

FACULTY ACTIVITY ANALYSIS *

DIVISION _____ SUBJECT _____ POSITION _____ RANK _____ WORKLOAD FT PT

Number of years teaching experience _____ At NVCC _____ In community colleges _____ Other levels (specify) _____

Number of terms teaching TICCIT _____ Years in rank _____

Age: 20-29 ____ 30-39 ____ 40-49 ____ 50- ____

SECTION A: TEACHING ACTIVITIES

A.1 Scheduled Teaching

a. Teaching Area (subject)	b. Course and Section No.	c. Enrollment	d. Credit hours	e. Method of Instruction Use the code from instruction sheet	f. Formal contact hours	+ g. Other contact hours	+ h. Hours of preparation and administration	= i. Average hrs. per wk.
							Subtotal	

	j. Level	k. Activity Description TICCIT	Non-TICCIT	Av. hrs. per week
A.2 Unscheduled Teaching				
A.3 Academic Program Advising				
A.4 Course and Curriculum Research and Development				
			Subtotal	

	Activity	k. Activity Description TICCIT	Non-TICCIT	Av. hrs. per week
Section B. Research, Scholarship, and creative work activities	B.1 Specific Projects			
	B.2 General Scholarship and Professional Development			
			Subtotal	

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Be explicit about actual hours spent in activities or preparation not time required to do so.

* Modified from WICHE NCHEMS form.

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Section C. Internal Service Activities

Activity Description

Activity	TICCIT	Non-TICCIT	Av. hrs. per week
C.1 Student oriented service			
C.2 Administrative Duties			
C.3 Committee Participation			
		Subtotal	

Section D. Public Service Activities

Activity	Activity Description	Av. hrs. per week
General Professional Service Advice Directed Outside the Institution		
	Subtotal	

TOTAL hours per week

NORTHERN VIRGINIA COMMUNITY COLLEGE
ALEXANDRIA CAMPUS

attachment

FACULTY ACTIVITY LOG

NAME _____

Week of April 14-April 20, 1977

ACTIVITY	Thurs. T	Thurs. NT	Fri. T	Fri. NT	Mon. T	Mon. NT	Tues. T	Tues. NT	Wed. T	Wed. NT	Comments
Formal Contact Hours											
Class preparation											
Strategy											
Content											
Test Preparation											
Test or Assignment grading											
Student Conferences											
Course related											
Other											
Discussion with colleagues											
Strategy											
Content											
Committee work											
Meetings											
Preparation											
Course related administrative details (withdrawals, scheduling conf., etc.)											
Professional Development											
Instructional Development (release time)											

T = TICCIT and TICCIT rel
NT = Non-TICCIT

UNIVERSITY OF CALIF.
LOS ANGELES

FEB 10 1978

CLEARINGHOUSE FOR
JUNIOR COLLEGES